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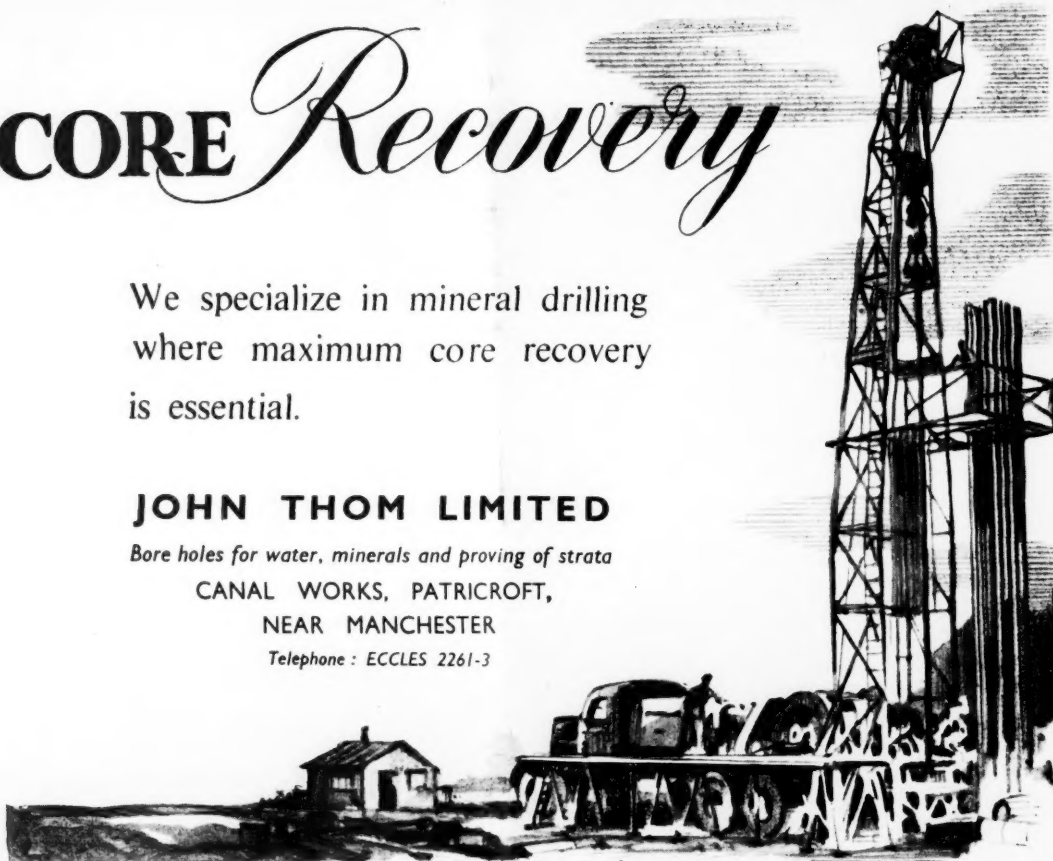
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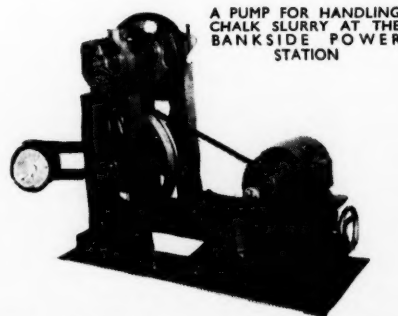
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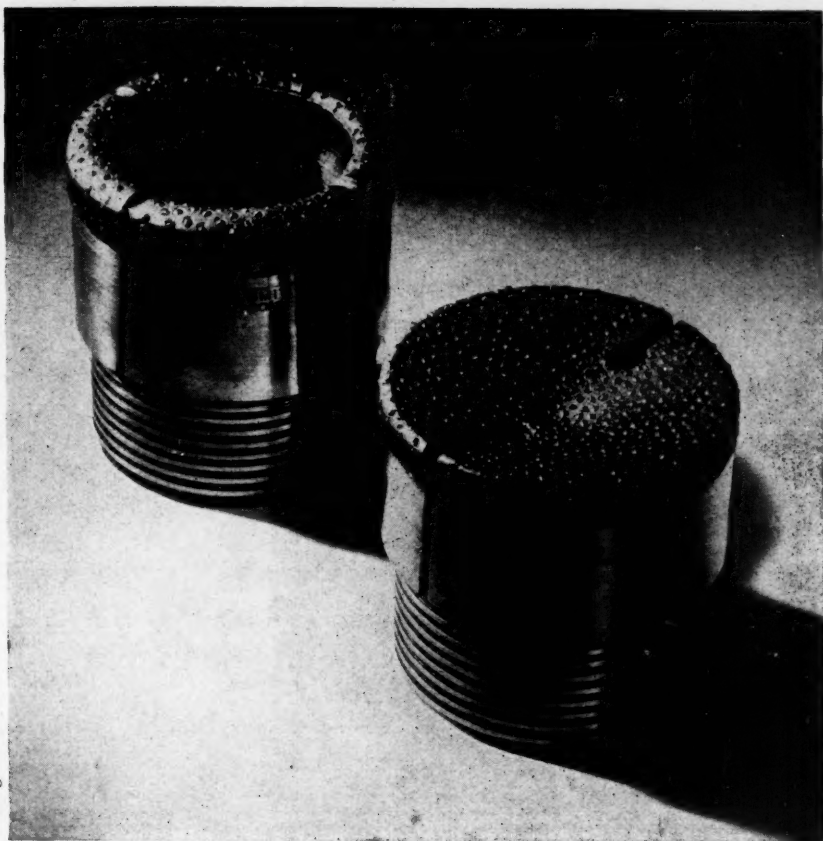
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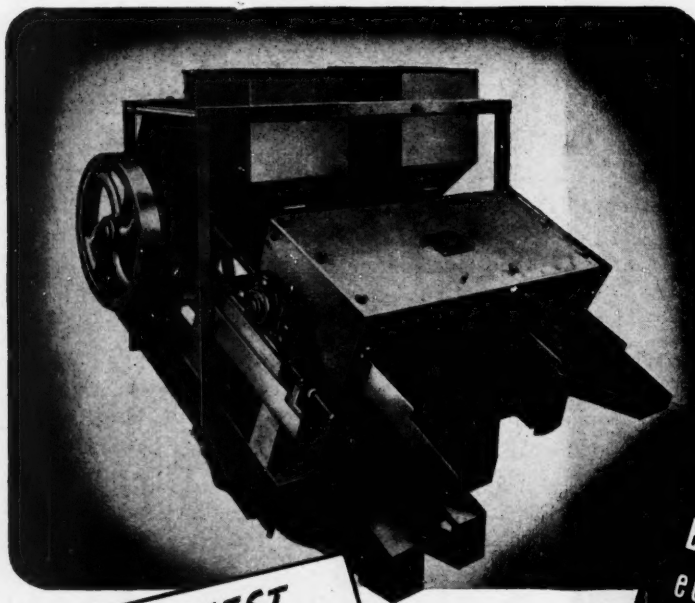
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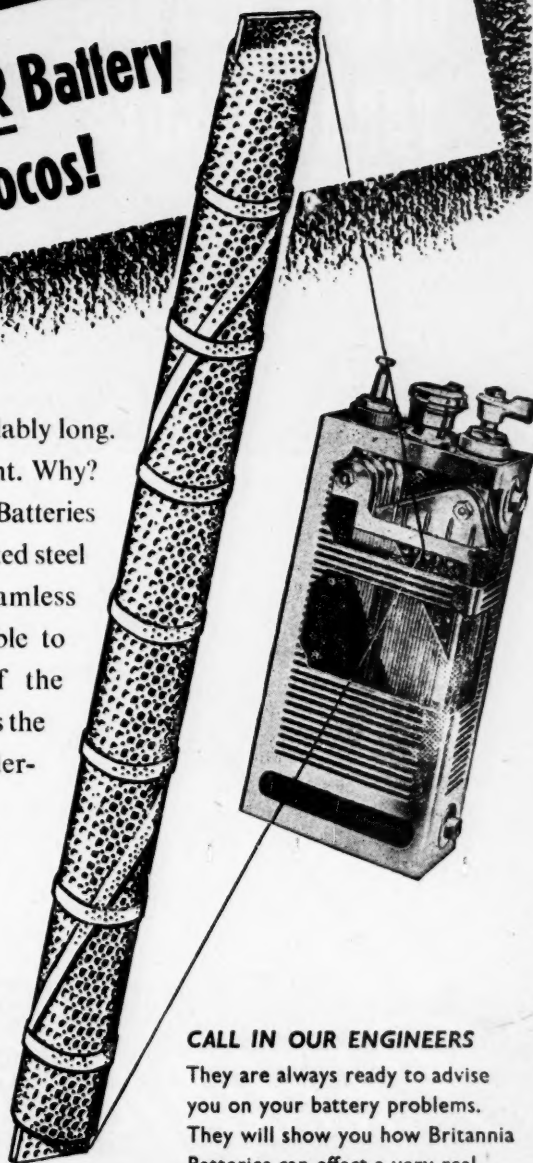
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The Mining Journal

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CONTENTS

Notes and Comments	385	Company News and Views	399
From Our Own Correspondent	386	Anglo American Strengthens Reserves to £18,000,000 ; Daggafontein's Imminent Uranium Production ; East "Dagga's" Restricted Milling ; "Sallies" Jubilee Year ; Western Reefs to Increase Capital ; Development Prospects at Vaal Reefs ; Rose Deep Repays Capital ; Outlook for Spaarwater.	
The War Against Corrosion	388	Company Shorts	400
Mining in China in 1952	390	Company Meetings and Announcements	402
New Equipment for the Coal Mining Industry	392	British South Africa Co. ; Rose Deep Ltd. ; East Rand Proprietary Mines Ltd. ; Anglo American Corporation of South Africa ; Anglo American Corporation of South Africa Group of Mining Companies.	
The Luxemburg Iron and Steel Industry	393		
The British Industries Fair, 1953	394		
Metals, Minerals and Alloys	396		
The Mining Markets	398		

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NOTES AND COMMENTS

In Favour of a Higher Gold Price

Expressions in favour of higher gold price continue unabated despite some very discouraging views on this subject announced in influential American business circles.

Mr. Havenga, the South African Finance Minister, has been a constant advocate of a universal rise in national gold prices. It may be recalled that in July last at the joint meetings of the International Bank and International Monetary Fund in Mexico City, one of his main arguments for such an increase was that it was an essential preliminary step to the re-establishment of an international gold standard. With so much talk in the air about convertibility, and the need for the United States to substantially increase her imports, Mr. Havenga has been attracting wider support for his views.

Speaking at an election rally in Johannesburg on March 25 last, he said that Mr. R. A. Butler, the U.K. Chancellor of the Exchequer, had pressed the claim for a higher gold price during his recent discussions in Washington. That being so, the discussion of this important question would confirm what many believed to be the case despite the fact that gold did not appear in the communiqué issued after the recent Commonwealth Economic Conference. In any event, Mr. Butler's advocacy has given support to Mr. Havenga's growing conviction that the gold price question is no longer one which can be considered as being in the interests of only South Africa, but one with which the financial and economic interests of a very large area of the world are closely concerned.

This belief is strengthened by Mr. Jules R. Timmins, President of the Hollinger Consolidated Gold Mine. Mr. Timmins, speaking at that company's Annual General Meeting in Montreal last week, declared that to delay an upward adjustment in the world gold price may provoke the same conditions which resulted in the depression of the early thirties.

Influential support for these views is also forthcoming from Samuel Montagu and Co., the London Bankers and Bullion Merchants. In the Annual Review for 1952, they state that the idea of a change in the gold price is growing in intensity over large parts of the world and will intrude

itself with increasing frequency in the coming months and years.

That the idea of a change will remain unacceptable, until there is a change of heart in the U.S.A., they write, is a fact. And what has to be borne in mind is that the President no longer possesses the necessary power to make any alteration and that no action on this question can be taken without the approval of the U.S. Congress. Thus, they conclude, it remains to be seen whether Congress will be converted by the arguments which will undoubtedly be put before them constantly.

Referring to the free market demand, the Annual Review sees no reason to suppose that it will not absorb all that is likely to be offered. Last year approximately 12,000,000 oz. were absorbed compared with 9,500,000 oz. in 1951. But, of course, should South Africa decide to abrogate its self-imposed rule limiting its free sales to 40 per cent of its output, the amount of gold offered to the free markets would be substantially greater. Should this happen the absorptive capacity of the free markets might well be tested to breaking point and the premium per fine ounce disappear.

Nevertheless, as Samuel Montagu's Annual Review points out, so long as the international situation remains as it is, and so long as the present economic situation maintains a system of currencies that are in part blocked, frozen, bilateral and inconvertible, the spectres of war and devaluation will persist. To most Europeans and all Asians, the only escape from this dual calamity is the holding of gold, and at the present price it is reckoned as a small insurance to pay.

The French Non-Ferrous Metal Situation

A Reuter message from Paris reports that the French non-ferrous metal market, which in 1952 suffered from short supply, consumption restrictions and high prices, is now facing an opposite trend. With the exception of nickel, all arresting influences have disappeared and stocks of most metals held by the trade and consuming industries have reached unusually high levels. At the same time, however, difficult marketing conditions are causing considerable con-

cern among producers in France and the French Union, owing to the prevailing threat of foreign competition.

Considering the major relevant non-ferrous metals in individual detail, the apparent consumption of copper in 1952 was 154,000 tons of primary metal including re-refined metal, particularly electrolytic. Imports during the same period were under 150,000 tons. Since that time reduced demand from consuming industries has increased stocks to such an extent that the metal federation has increased its monthly quota to 11,000 tons. French Union output of copper is negligible. The bulk of copper imports last year came from Belgium and the Belgian Congo, and comprised 55 per cent of the total supply. The dollar area, notably the United States and Canada, supplied 40 per cent, while the remainder came from the sterling area. This year France is expected to buy more copper supplies from Belgium and the Belgian Congo, and it is also planned to increase purchases in Rhodesia. Recent negotiations with Chile failed owing to the high prices asked by the South Americans.

Lead and zinc output in France and in French North Africa has been considerably increased during the post-war period. Output of lead concentrates in 1952 reached 180,00 tons, 120,000 tons contained metal. This production showed an increase of 20,000 tons over the output of 1951. Home consumption was 90,700 tons compared with approximately 85,000 tons in previous years, and with a refining capacity of 105,000 tons, the excess was sold abroad either as concentrates or in metal form after processing in Belgium. Part of these exports were made to reimburse dollar loans received through the E.C.A.

Zinc consumption reached 120,000 tons in 1952, a figure which showed an increase of 5,000 tons above the normal rate. Output in France and French North Africa totalled 113,000 tons of concentrates or 60,000 tons of contained metal. With a domestic refining capacity of 80,000 tons considerable quantities of ores had to be bought abroad. French refinery capacity is to be increased this year by operations at the refinery at Aubry les Douai, which will be amongst the most modern in the world.

A record output of 106,000 tons of aluminium was produced last year and enabled a resumption of exports mostly to Belgium in exchange for copper, although it is feared that discrepancy between French and Canadian prices may divert Belgian buying to Canada.

The First International Magnesium Exposition

The first international magnesium exposition was held in Washington, D.C., on March 31, and April 1 and 2, 1953. Government agencies and the United States armed forces participated and invitations to exhibit were sent to all companies known to be associated in any manner with the industry in Great Britain, Canada, Norway, Sweden, France and Germany. Exhibits included actual production operations. *American Metal Market*, in giving over a complete section to the exposition and to magnesium in its issue of March 12, pointed out that the exposition was sponsored by the Magnesium Association, although exhibits were not confined to those of association members. The entire display comprised 50,000 square feet of exhibit space, divided equally between the services and government agencies on the one hand, and industry on the other.

It will be recalled that the Paley Report indicates the estimated increase in consumption by the year 1975 over that of 1950 as a possible 1,845 per cent. As approximately 20,370 tons were consumed in 1950, the figure suggests a hypothetical consumption of about 376,000 tons in 1975. Since 1943 the remainder of the free world has been consuming, at the maximum, one-half as much magnesium as is consumed in the United States.

In the United States to-day magnesium is accepted as a common structural metal, and is the lightest of the range.

It is felt, however, that further research is necessary to improve its behaviour under certain conditions and to lower cost of fabrication.

Australia's Export Trade in Coal

It seems probable that Australia may again build up an export trade in coal, but if successful, its continuance will depend upon freedom from strikes and other industrial troubles which effectively destroyed that trade in the past. Negotiations are in progress with Pakistan and if concluded, the Queensland Government will consider increasing the scale of mechanization in the State mines. It is stated that Japan is interested in obtaining Australian coal, to the extent of 3,000,000 tons per year, if available at a satisfactory price.

At the present time New South Wales, and to a certain extent, Queensland, have reached a state of over-production and output has had to be restricted in consequence. The position is due partly to the industrial recession of last year following the building up of a large open cut output, but the condition goes further back to the steady loss of markets through the union policy of strikes and other industrial troubles, which caused a great swing to diesel power, and was directly responsible for the development of the Victorian brown coal deposits to a productive level of nearly one-half Australia's production of black coal. As a result of the union's industrial policy over many years, its members are now fearing unemployment.

Portugal

(From Our Own Correspondent)

Oporto, March 23.

Mid-March has been reached without there being any sort of reason to suppose that the collapse in the exports of tungsten and tin ore will be checked, in fact everything points to a speeding-up of the downward slide in exports and an increase in smuggling into Spain of both the ores mentioned above. Commenting on the impossible conditions under which the Mining Industry here is working, the Oporto Daily Paper *O Journal de Noticias* of March 12, in a leading article, sums up as follows:

"The malady from which the Portuguese Wolfram Industry is suffering at the moment is not difficult to cure. When the export tax of Esc. 40.00 per kilo was levied the quotation for wolfram was Esc. 150.00 per kilo. This tax was, then, nothing that could not be borne. To-day, however, with the price of wolfram reduced to half that quotation neither can the tax nor the economic and fiscal reasons for levying that tax be justified. Summed up, the crisis through which the Mining Industry is passing is caused by an anti-economic export tax, nothing else, and either that tax is removed or mining activities will cease."

This summing up is absolutely accurate. As your correspondent pointed out in a recent letter, the exports for December 1952, compared with those for January 1953, can be likened to the historical "writing on the wall." While the Mining Industry has a strong case the official attitude toward that Industry is easy to understand. Portugal is an agricultural country, and the population can be fed and kept quiet on wheat, rye, maize, barley, cattle, olives, oil, etc., which cannot be done with tin ore or wolfram. If the mines close, the workers, so says the Government, will merely shift their activities to work on the land, already suffering from a shortage of workmen. To this the Mines retort that agriculture is in just as low water as is their own trade, that the value of land is very low and that thousands of small holders are selling out and seeking work in Brazil and the African Colonies; which may be unpleasant but which is true.

Canada

(From Our Own Correspondent)

North Bay, March 20.

A mineral discovery of unusual significance has been made beneath the bed of Lake Nipissing. Inspiration Mining and Development Co. first obtained evidence of uranium, together with columbium and tantalum, in rock outcrops on a group of small islands situated in Lake Nipissing at a point about five miles offshore from the city of North Bay. Three diamond drill rigs were set up on the frozen surface of the lake during the current winter. A number of holes have been drilled, sufficient to confirm the presence of a mineralized zone of an average width of about 250 ft., and a length of 800 ft. as so far determined. Chemical analyses have been made, and the deposit as so far explored has been found to contain 0.10 per cent uranium oxide and a little over 1.0 per cent columbium-tantalum.

The initial estimates suggest gross values in excess of \$50 per ton. It has also been announced that core from one of the deeper holes revealed considerable pyrrhotite mineralization, one sample from which assayed 1.0 per cent nickel. In addition to the group of small islands which contain little more than 300 acres of land surface, the Inspiration Company has acquired mineral rights to some twelve square miles of lake bed surrounding the islands. The ice is expected to break up within the next week or so, at which time further drilling will be done from the small islands.

A NEW COLUMBIUM-TANTALUM DEPOSIT

Meanwhile, marked interest has been aroused in mining circles—more particularly in connection with the prospect of developing a large producer of columbium and tantalum in this country, both of which are looked upon as of vital importance at this time. The discovery lies about 100 miles south from the native silver field of Cobalt, and about 70 miles east of the nickel fields of Sudbury in Northern Ontario. The rock formation at the scene of the new columbium-tantalum-uranium deposit is classified as old sediments—dolomite and limestones which have been altered into pyroxenite. Admittedly, the complexity of the ore may pose metallurgical problems, but the importance of columbium-tantalum oxide in this age of heat-resistant steel is considered to be sufficient to successfully harness the ingenuity of metallurgists and chemists in evolving methods for the economic recovery of the highly valued vital mineral elements.

GROWTH OF IRON MINING IN N. ONTARIO

Iron mining in the Steep Rock area of Northern Ontario is growing in magnitude. The publicity associated with the newer iron ranges in Northern Quebec and Labrador, has had a tendency to distract attention in that direction. However, it should be remembered that the Steep Rock Range now under development in Ontario has a known length of about 11 miles, and along which several ore bodies of an average width of more than 250 ft. have been disclosed. The combined length of the ore bodies has been estimated at four miles, and with provisional estimates of 500,000,000 tons of ore per 1,000 ft. in depth. The general programme of operators along the Steep Rock Range points toward production of some 10,000,000 tons annually within the next ten years.

A nickel-copper-zinc deposit of considerable importance is being developed by Eastern Metals Corp., an organization incorporated a little more than a year ago. Drifting operations in progress are revealing ore which carries over

4 per cent nickel across drift width, or some 2.4 per cent nickel across a width of 26 ft. The scene of this significant development is south-east of the old city of Quebec—within 65 miles of the point where General Wolfe won the history-making battle on the Plains of Abraham.

A railway is to be built by the Canadian National Railways to the Chibougamau mining area of Northern Quebec. Surveys will be undertaken during the coming summer. The new line will be designed to service the Opemiska mining area as well as Chibougamau—and the new railhead at Chibougamau may then be expected to be the jumping off place from which prospectors will penetrate yet another stage farther into the virgin areas that lie still farther north.

THE VALUE OF AERIAL SURVEYS

Helicopters are being employed to good advantage in making geological surveys, as was reported in *The Mining Journal* of October 31, 1952, and February 27, 1953. Five geologists, using two helicopters, mapped 57,000 square miles of the southerly part of the Keewatin district in north-western Ontario in a period of 113 days. This area, geologized in one summer at a cost of \$3.63 per square mile, would have required a period of 25 years by conventional methods with the same number of men employed. Observations were recorded on a scale of two miles to the inch, but the new geological map being prepared will be on a scale of eight miles to the inch.

The use of electromagnetic devices, together with airborne prospectors and geologists, has combined to point the way to possible new mineral deposits in Canada at a rate never before anticipated. As a result there is a growing challenge to the resourcefulness of financiers and promoters to keep pace with the work of testing the merits of areas towards which the instruments of science point with varying degrees of favour. In former times it was the eyes of the prospectors who found the way to the mineral deposits brought under development. Now, in many instances, it is the instruments of science which are bringing to light great mineral deposits which heretofore remained hidden and impossible to be seen by the eyes of the prospector. Outstanding among these recent discoveries in areas long since passed by by the old-time prospector are the new ore bodies in New Brunswick, the base metal ores within 65 miles of Quebec City, the columbium-tantalum-uranium deposits near the city of North Bay in Northern Ontario, and the nickel deposits at Lynn Lake in Northern Manitoba.

SURVEYS OF RESOURCES

Approximately 175 parties will be placed in the field this year by the Department of Mines and Technical Surveys to carry out geological, topographical and other mapping and to collect related data for the preparation of maps and charts, the Minister of Mines has announced. This compares with 173 parties in 1952.

The various mapping, surveying and charting projects in the programme reflect among other things the continued and rapid spread of the search for oil north and west of the Peace River area into North-west Territories, and the high level of interest in the uranium areas of northern Saskatchewan and in the iron ore potentialities of the Ungava areas of northern Quebec.

Two of the items envisaged concern the use of helicopters. They will be carried out by the Topographical Survey with six topographic engineers attached to each. One of the parties will be engaged in mapping the Quebec-Labrador iron ore field between Knob Lake and Fort Chimo and the second is intended to establish vertical control for mapping over an estimated 80,000 square miles of promising oil territory in west central Alberta extending north-west into north-eastern British Columbia.

CORROSION—I.

The War Against Corrosion

By A. G. THOMSON

There are three reasons why corrosion is a problem of direct concern to the mining industry. In the first place, the more rapid depletion of ore supplies has made it increasingly important to minimize wastage of iron and steel from corrosion and other causes. Secondly, enormous quantities of non-ferrous metals and minerals are consumed annually in the form of protective coatings and anti-corrosive paints. Finally, corrosion has a significant effect on mining costs by reducing the useful life of unprotected equipment and structures such as headgears, piping, cocopans and the like. In the following article, the initial instalment of which is presented below, the author indicates the tremendous annual losses due to corrosion, and continues by pointing out the various methods used to combat the deficit. Although corrosion is an important factor in all industrial installations, his main interest is in those metallic structures more generally associated with the mining industry.

How far does corrosion affect the supply and demand equation for useful metals? This question must remain unanswered, because estimates of corrosion losses on a tonnage basis could only be misleading on account of the many complicating factors involved. Whereas surface corrosion would not affect the strength of a massive steel girder, the slightest trace of rust at a critical point might destroy the usefulness of some tiny instrument component. Nearly thirty years ago, Frank N. Speller estimated roughly that the renewal of iron and steel products subject to corrosion because of inadequate or no protection, amounted annually to about two per cent of the total tonnage of such products in use. Much of this metal has a scrap value, but on the other hand the replacement cost, loss of time and production, and consequent damage are usually many times the cost of the new metal required for replacement. Since 1925, the average useful life of steel has probably been increased by some 50 per cent.

Because of the difficulty of calculating corrosion losses in terms of tonnage, estimates are usually based on costs. For example, the cost to the world of iron and steel wasted by rusting has been estimated at £600,000,000 a year. Dr. J. C. Hudson has calculated that the cost of protection of steel in the United Kingdom amounts annually to a figure in the region of £200,000,000. The annual losses to the United States are believed to be of the order of \$5,500,000,000 a year, equivalent to an annual loss of \$50 per head of the population. This estimate is based on losses due to corrosion, cost of maintenance, and substitution of more costly metals for plain iron or steel.

EFFECTS OF CORROSION

The effects of corrosion on the consumption of non-ferrous metals is particularly difficult to assess, but in an analysis of the U.S. direct losses, including the cost of corrosion control, Uhlig (1) gives the following figures: tin andterne plate \$20,000,000, nickel and nickel alloys \$92,000,000, copper and copper-base alloys \$50,000,000, and stainless chromium-iron and chromium-nickel-iron alloys \$620,400,000.

The indirect losses from corrosion cannot possibly be estimated, but they are certainly immense. They include loss of oil, natural gas and water through corroded pipes; reduced capacity of pipe lines; shut down of water supply, electric power, and the like. There are other indirect losses which are less easily recognized. Thus large tonnages of metals are consumed needlessly each year because equipment is over-designed to take care of corrosion. For example, the specified margin of safety for the wastage of ships' plates by corrosion is 20 per cent of its thickness. If wholly effective control methods could be devised, the corrosion allowance could be reduced with a corresponding saving of weight and steel.

The necessity for special protective measures against corrosion is adding considerably to the cost of South Africa's uranium plants. Mild steel, cast iron and concrete constitute almost 100 per cent of the materials normally used for constructing plant and equipment that come into con-

tact with pulps and solutions in a gold reduction plant. These materials are all rapidly attacked by dilute sulphuric acid, and in designing the uranium plant at West Rand Consolidated Mines Ltd. it was necessary either to protect them with an acid resistant covering or to use other materials which are themselves acid resistant. In the first case rubber was used to line mild steel and cast iron, while acid proof brickwork was used to protect concrete. In the latter case the acid resistant materials used were stainless steel, other acid resisting alloys, and plastics. The majority of tanks, pump hoppers, pipes and valves are rubber lined. Concrete sumps and similar installations that might be subjected to spillage or drips are protected by acid resisting brick linings. Pipes that must be protected internally and externally are made of stainless steel or plastic. Pump parts are rubber lined or are made from stainless steel or other corrosion resistant alloy. Special protective paints are used in many places.

THE CORROSIVE ENVIRONMENTS

All the common metals corrode more or less quickly, depending on the atmosphere to which they are exposed; that is to say, at ordinary temperature and under the influence of oxygen, water vapour, and other forces, they tend to turn into oxides, hydrates, carbonates, etc., the products of corrosion being more or less complex.

George Chaudron (2) divides corrosive environments into four main groups, namely atmospheric corrosion, water corrosion, underground corrosion, and corrosion of metal in contact with different binding materials. Corrosion may be accelerated by mechanical erosion, electrochemical phenomena, and biological reactions. Furthermore, the effects of the mechanical properties of a metal may vary greatly according to whether it is uniform, pitted or inter-granular. The investigation and treatment of corrosion therefore presents many problems of an extremely complicated nature.

Chaudron also points out that from a practical point of view, it is necessary to distinguish between the value of the metal lost in the process of corrosion and the real loss caused by this phenomenon to the piece of metal, apparatus or construction. A massive piece of metal might be severely corroded without losing its qualities, and hence its intrinsic value, to any appreciable extent. On the other hand, a thin piece of metal might lose almost all commercial value as a result of an almost imperceptible attack.

PROTECTIVE COATINGS

There are three broad lines of approach to the problems presented by corrosion. Metals can be protected, corrosion may be inhibited, or materials with improved corrosion-resistant properties may be employed.

The life of metal structures can be increased by the intelligent use of protective coatings, but much of the covering of metal-work is still carried out in such a way that good results cannot be expected, either because the surface is unsuitably prepared or because the choice of coating is unwise. Detailed researches, sponsored by the

Corrosion Committee of the British Iron and Steel Research Association (formerly of the Iron and Steel Institute), have established that the success of a paint system largely depends on the surface condition of the metal before painting. In particular, it has been shown that in the case of steelwork, satisfactory results can only be achieved if all mill scale and rust are removed before paint is applied. Structural steelwork usually arrives on site with a heavy deposit of mill scale, which, if allowed to remain, will peel off as a result of electro-chemical action. The best paints cease to have any protective value when the surface to which they are applied breaks away from the parent metal and flakes off. Metal scale is expensive to remove, but in the long run thorough preparation of the surface fully justifies the cost.

The most efficient methods of removing scale and rust are by pickling, which is suitable only for small articles, and grit blasting. In one pickling process steel is pickled in warm sulphuric acid, dipped in water, and immersed for a few minutes in hot phosphoric acid. This leaves a phosphate coating and if the paint is applied while the steel is still warm the results are usually satisfactory. Phosphate baths are particularly useful in the treatment of galvanized iron, for paint does not readily adhere to a freshly galvanized surface. Wire-brushing does not remove mill scale. Flame-cleaning does not remove scale and rust completely, but it does render much of it brittle and capable of being removed with a brush or hammer, the adherent residue apparently providing a suitable basis for painting. Fancott and Hudson (3) have shown that any protective treatment properly carried out will be successful if all mill scale and rust are removed.

TYPES OF PROTECTIVE COATING

The protective coating may be either non-metallic or metallic. The former category includes the traditional oil paints and also various types of coating which are still at an early stage of development. Relatively thick coatings of cement aggregate have proved very effective in preventing corrosion of steel. Evans considers (4) that the inhibitor is probably the alkali slowly liberated during the setting of cement, and therefore, only those types of cement which develop alkali should be chosen. Metals like lead, zinc and aluminium, which are attacked by alkali, cannot be protected in this way.

Large quantities of non-ferrous metals are used as protective coatings. Small factory-produced articles can be coated by electroplating, dipping in metal, heating in powder or exposure to a vaporous compound. Large structures can be cleaned, either before or after erection, by grit-blasting and coated with zinc or aluminium. Many authorities favour a three-stage procedure for the protection of metal structures, which consists of (1) grit-blasting, (2) spraying with aluminium or perhaps zinc, and (3) application of an oil paint. This method has proved capable of protecting steel against corrosion under adverse conditions in many parts of the world during the past ten years. On the Forth Bridge, four panels of steel sprayed with aluminium were fixed in 1938 at a position 10 feet above high-tide level, one member of each pair being painted. All four specimens are still free from rust.

A scheme which is low in initial cost will not necessarily prove economic over the projected life of the structure. A more important consideration than first cost is durability of the protective treatment, since over 50 years the total cost of repainting will far outweigh the initial expenditure incurred in surface preparation. Moreover, the cost of repainting will depend very largely on how much pre-treatment is needed when each renovation is carried out.

No figures are available as to the comparative costs of alternative methods of treatment for the protection of head-

gears and other mine structures, but Stanbridge (5) has compared the total cost of protection over 50 years for several specifications. The results of his calculations are of practical interest to mining engineers. Calculated on the prices then ruling, the lowest initial cost was that of hand-wire brushing followed by one coat of primer and one finish coat, which amounts to £5 10s. per ton, compared with £16 10s. per ton for shot-blasting and metal spraying followed by one finish coat. The first specification, however, gives an interval of only four years between renovations, each renovation costs £5 per ton, and the total cost of the scheme over 50 years is £44 per ton. On the other hand, shot-blasting and metal spraying followed by one finish coat has a life of 8½ years between renovations, the cost of each renovation is only £3 per ton, and the total cost over 50 years is £25 18s. per ton. Flame-cleaning with one coat primer, one undercoat and one finish coat, costs £16 15s. initially and gives a first life of 7 years, with 6 years between subsequent renewals, the total cost over 50 years being £41 15s.

INFLUENCE OF DESIGN AND FUNCTION

The choice of treatment is influenced by the design and functions of the structure. For a structure which is difficult of access and which could not be repainted without considerable disorganization of production, a protective system of maximum efficiency is required. When the £60,000,000 new Abbey Works was built at Margam, the surface of all steelwork above crane level (i.e., the most inaccessible portion) was prepared by grit-blasting and aluminium spraying.

Evans considered that one of the main needs of the day is authoritative, disinterested information on protective coatings. The exposure tests carried out by independent scientific bodies are of great value, but mining companies, etc., should also carry out comparative tests on their own structures. In addition to the ordinary protection of metal, there are often factors which justify expenditure of special coatings. Rubber, brick and cast basalt liners are extensively used in the mining industry and in chemical works it is often advisable or even necessary to go to the expense of plating equipment with silver, gold, platinum or stainless steels in order to provide complete protection against powerful reagents which would destroy unplated iron almost instantaneously.

PREVENTION OF CORROSION

In suitable circumstances control or modification of the environments to which metals are exposed may be a particularly effective method of preventing corrosion. Since almost all corrosive processes require the presence of water or water vapour, there can be no corrosion in an environment which is sufficiently dry. It has been established that when the relative humidity is kept below 30 per cent corrosion will be negligible; if control of humidity is supplemented by the use of protective oils and greases, the critical humidity may be increased to 45 per cent. Humidity may be controlled either by the use of air conditioning equipment or, in the case of small articles, by sealing the equipment to be protected inside a container together with a suitable desiccant such as silica gel. This method should find applications in the mining industry for protecting delicate instruments, electrical components, etc., which are stored in conditions of high humidity.

Corrosion of most metals can be eliminated or controlled by removing oxygen from the atmosphere. One of the oldest methods is by the corrosion of scrap iron introduced into the system for this purpose, but more reliable results are achieved by the use of efficient de-aerators, which are capable of reducing the oxygen content of boiler feed to below 0.01 per million. De-aeration has been applied

successfully to the prevention of corrosion in steel pipe lines used to carry otherwise corrosive water for long distances.

Mention must also be made of the use of inhibitors to control corrosion. Chromates, dichromates, organic chromium compounds and nitrites are employed regularly to control corrosion in the large volumes of cooling water used in petroleum refining processes. Sodium nitrite has proved particularly effective in preventing corrosion inside petroleum product pipe lines. There are many other classes of inhibitors in common use. Among the latest types to be introduced are certain volatile compounds known as vapour phase inhibitors, which may be incorporated in packaging materials in order to maintain a non-corrosive atmosphere within a package.

Finally, corrosion may often be avoided by the application of existing knowledge when equipment is being designed. For example, the galvanic relationship among metals and alloys are sufficiently well-known to serve as a guide for avoiding combinations that are far apart in a gal-

vanic series. Again, some combinations of metals and corrosion media only cause corrosion difficulties within certain critical ranges of concentration or temperature. By providing efficient ventilation, by supporting tanks on legs, and by ensuring that no pockets of corrosive liquids are left when tanks are drained, designers can do much to increase the life of plant.

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Mining in China in 1952

By JOHN CARDEW

The following article presents a comprehensive resumé of the mining industry in China during the course of last year. The author points out that in China unprecedented importance has been given to mining of all types since 1950 and indicates the possibly optimistic future of the mining industry there owing to the presence of considerable ore reserves.

Although a number of production increases were reported, some of which raised output above pre-war levels, mining activity in China last year was largely concentrated on prospecting for minerals over large areas of the country. Altogether nearly 90 teams of geologists were engaged in field work concerned with deposits of copper, lead, zinc, iron and coal. According to a recent statement by the well-known geologist, Dr. J. S. Lee, many important discoveries were made—"many of them unexpected"—and numerous former estimates of reserves revised. One of the big iron mines in North China, for example, has been found to have a reserve "ten times greater than had been supposed."

NEW IMPORTANCE OF MINING

Now that China has embarked on her first five-year plan for large-scale industrialization, unprecedented importance has been given to mining of all kinds. Preparatory work to this end has figured largely in Government policy since 1950 and was carried to a new stage in the course of last year. A major development was the setting up last September of a separate Ministry of Geology (headed by Dr. Lee) and the subsequent opening of two new mining institutes, one in the capital and the other in South China.

Some of the most important field work carried out during the year was centred on the great iron centre of Anshan in North-east China (Manchuria). The collection of detailed geological data was completed in preparation for extensive exploitation of iron and magnesium deposits. There are four major iron and magnesium mining regions in Anshan and the aggregate depth of last year's drilling in a 1,500 square mile area was reportedly more than twice that carried out by the Japanese in the course of 20 years.

Typical of the way in which full advantage is taken of China's enormous population has been the Government's policy of encouraging peasants to furnish information about possible deposits of mineral ores. Wherever geologists go they address meetings of local peasants and miners and explain to them how to recognize different kinds of ores and rocks. In this way shepherds in Kirin Province last year found a vein of good grade antimony ore which exists in workable quantities and an amateur chemist was rewarded for his discovery of one of the group of platinum metals.

Altogether in the course of the year local reports sent in to the Ministry resulted in over 100 new discoveries of deposits of iron, coal, oil, asbestos, quartz, mica, marble and non-ferrous metals such as gold, silver, tungsten, manganese, aluminium, mercury and other rare metals.

CONSIDERABLE RESERVES

Complete figures for mineral production in China are not available, but information from official Chinese, United Nations and other sources give some idea of the present state of the mining industry, and especially the tremendous scope that exists for its development. In 1936 mining accounted for just over 1 per cent of the national income of China and anything from 60 to 100 per cent of the current production of metalliferous ores was usually exported. It is clear that nothing less than a revolutionary transformation must take place if the industry is to be made to serve China's own industrialization, maintain exports to the country's Eastern trading partners and play a part in the greatly expanded trade with the West that China is known to be currently seeking.

In reserves of coal China ranks fourth in the world (after the U.S., the Soviet Union and Canada) with reserves estimated at 283,000,000,000 tonnes. Every province has reserves, but four-fifths of the total are in Shansi and Shensi. Opencast mines at Fushun, near Mukden, operate on the thickest bed of bituminous coal in the world, the measurement in places exceeding 400 ft. Discoveries of new deposits were reported last year from the Pinghsiang coal mining area of Kiangsi Province, and in the area of the Wei River, a tributary of the Yellow River, in Shensi Province. Production last year is believed to have been something over 40,000,000 tonnes.

According to the National Geological Survey, China has iron ore reserves exceeding 2,150,000,000 tonnes. Production reached a peak figure of 9,727,217 tonnes under the Japanese in 1942—half of it from Manchuria—but had declined considerably by the time the civil war ended in the North-east. Pre-war annual production was at the rate of about 2,000,000 tonnes, a figure that was first exceeded in 1951. It is interesting to note that a Sino-Japanese trade agreement signed in

Peking last June by representatives who attended the April economic conference in Moscow provided for a resumption of iron ore exports which have traditionally gone to Japan. So far the agreement has not been carried out but official Japanese opinion is understood to be convinced that China is producing exportable quantities of ore in spite of greater home consumption. Lungyen is the centre of iron ore mining in China and Peking radio reported that "vast" new deposits were discovered in the area last year and said that part of the reserves, in seams reaching "several hundred metres in width," were to be worked by opencast methods.

IMPORTANT TUNGSTEN PRODUCTION

As the latest United Nations report on mining in Asia points out, China continues to be the leading world producer of tungsten ore. The country's known resources are computed to amount to four times the total of those of the rest of the world. Wolfram is found mainly in southern Kiangsi with a small production in Hunan, Kwangtung and Kwangsi. Production reached a wartime peak of nearly 12,000 tonnes of dressed ore in 1942, but declined thereafter and was at the rate of some 7,000 tonnes a year in the closing stages of the civil war on the mainland. All the producing provinces are in the present Central-South China administrative area, one of the leading mineral regions of China, and a member of the Central-South Administrative Committee was recently reported in the Peking press as having said that tungsten output in 1952 was 83 per cent above the pre-war highest level. This would have meant a production of 26,600 tonnes of ore. New deposits were located during the year in a number of provinces south of the Yangtse River.

An indication of the fact that tungsten production began to increase after the present Chinese Government was established in the latter part of 1949 was provided by the volume of exports to the U.S. as recently as 1950. Although shipments early began to the Soviet Union and Eastern Europe, especially Czechoslovakia, sales to the U.S. in the first half of 1950 were at an annual rate of over 5,800 tonnes, compared with less than 2,000 tonnes in 1949. Imports from China used to account for one half of U.S. tungsten requirements but exports were banned by the Chinese Government in December, 1950, following the earlier American suspension of all export permits to China, Hongkong and Macao.

OTHER MINERAL DEPOSITS

China's estimated manganese ore reserves are some 29,380,000 tonnes with a manganese content varying from 20 to 58 per cent. Main deposits are at Loping, in Kiangsi Province, and new reserves were located last year in other southern provinces. Production has fluctuated widely, reaching 79,187 tonnes in 1937. No reliable figures were ever subsequently issued by the Kuomintang and the present output is not known. It is probably in excess of domestic needs and the inclusion of manganese ore together with coal, iron, magnesite, bauxite and asbestos as exports under the agreement with Japan was not surprising.

Although China is known to have exploited copper for at least 4,000 years, production has never been great. In the past most of the output has come from a gold-copper mine near Keelung, Formosa, which produced a little over 6,000 tonnes in 1943. In the same year Manchurian production was 1,736 tonnes and that of the other main producing region, Yunnan Province, 533 tonnes. Modern copper refineries, some of them using electrolytic methods, are in operation and during the war and are said to have turned out metal of a purity of 99.95 per cent. They were all working at capacity last year and at the Moscow conference in April the leader of the Chinese delegation said that copper production in China had then surpassed the highest pre-war level of output. The country was an importer of copper

in 1950-51 but more recent information concerning the percentage of home requirements provided by Chinese production is not available.

The largest antimony bearing field in the world is in Hunan Province where more than 300,000 tonnes have been produced in the past 40-odd years. The Government has been reported as aiming at a yearly production of 12,000 tonnes from this field alone. Highest output recorded was 16,686 tonnes in 1928 and the record pre-war export figure was 20,000 tonnes in one year. Production dropped to only 5,000 tonnes a year after the war but has risen considerably since. Official Chinese sources quoted by Peking Radio suggest an output last year in the vicinity of 14,000 tonnes.

China's highest pre-war production of tin was 15,440 tonnes of concentrates in 1938, of which 10,732 tonnes came from the single province of Yunnan. The average output before the war was 10,000 tonnes yearly, dropping subsequently to about half this figure. In Yunnan, there are both surface residual deposits and shaft mines, and much has been done to modernize the hitherto primitively worked Malake where in October, 1952, production was said to have exceeded the highest pre-war output. The extraction of Kwangsi ore, was reported to have reached the pre-war level at the end of last year.

THE SIGNIFICANCE OF OIL

A United Nations estimate that North-west China may prove one of the major oil-bearing regions of the world has been endorsed by Dr. Lee, one of the acknowledged Chinese authorities on the subject. Producing centres are in Kansu and Shensi Provinces but the greatest recent advances have been made in Sinkiang, where since 1950 joint Sino-Soviet concerns have been exploiting oil and non-ferrous metals on the basis of an equal sharing of control, expenses and output. Sinkiang is virtually inaccessible except from the Soviet Union (although work has begun on a rail link with the rest of China) and much Soviet mining equipment is known to have reached the province since the agreement between the two countries was concluded. The Chinese press has put oil production last year at 265,000 tonnes (including Manchurian synthetic).

Production of lead, zinc, silver, mercury, molybdenum, bauxite, gypsum, salt, phosphate and asbestos was reported to have increased last year in all the main producing regions but no figures are available. Lead output before the war was 3,844 tonnes in all of China excluding Manchuria. The latter produced over 11,000 tonnes in 1943. Total production of zinc in 1941 was 8,475 tonnes and the output of mercury used to be adequate for limited domestic requirements. Silver is a by-product of lead production in Hunan. Gold is found along the borders of Tibet (a region in which the search for minerals is only just beginning) and is recovered in northern Manchuria from low grade stream gravels. Incomplete pre-war statistics put production at 500,000 oz.

Improved transport facilities are believed to have resulted in a considerable rise last year in the mining of Yunnan phosphate, as well as asbestos in the neighbouring province of Sikang. Fibres from the latter reserve, up to six-in. long, were among the numerous Chinese minerals displayed at the Leipzig Fair in Eastern Germany last September. The active exploration for uranium-bearing minerals first reported by U.N. sources in 1951 continued last year in Sinkiang, Suiyuan and Kwangsi Provinces.

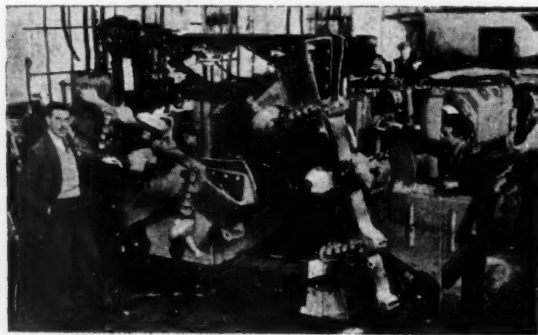
Chinese ores and metal concentrates have been playing an important part in all the trade agreements the country has with the Soviet Union and the East European countries. Similarly mining equipment has figured in Russian, Polish, Czechoslovak and East German exports to China. Some equipment is also now being made in China.

New Equipment for the Coal Mining Industry

New equipment for the coal mining industry has recently been developed in America, which embraces production underground and the specific tests of safety engineering.

THE MARIETTA MINER

Radical changes in road-driving technique throughout the majority of British collieries is foreshadowed by the arrival in this country of a new American mechanical cutter which, if successful, may promote altered thought



The Marietta Miner

regarding face cutting techniques. The outcome will be roads that are more economical, infinitely safer and more speedily driven. It is even envisaged that the departure from blasting methods may leave the walls sufficiently sound to support the roof with only a few girders—perhaps none at all.

The real value of the Marietta Miner, however, lies in the anticipated driving progress of six yards a shift, twice as fast again as blasting methods, and the fact that it will slash costs to a tenth of what they are now. The machine, produced by the Marietta Manufacturing Co. Ltd., of Point Pleasant, West Virginia, is now at Wellesley Colliery, Buckhaven, Fife, where it will be used experimentally to drive the first new-style roads.

Stone mining, which is, of course, what the road-driving will amount to, is a new departure for the Marietta. The model seen here is only the eleventh to leave the assembly line and the other ten are engaged on coal-cutting at the Orient No. 3 Mines, Illinois, where the Chicago, Walmington and Franklin Coal Company, with as few as 300 personnel, can produce 6,000 tons of coal a day.

Nine feet-high seams with roads like "a tarmac highway" contribute to the achievement of output figures which in this country would be a sensation, but the biggest factor is the new miner which can hew, break and convey to waiting transport 300 tons of coal an hour.

The machine is 25 ft. long, 10 ft. broad and 6 ft. high. It weighs 28 tons. Electrically and hydraulically operated, it runs on a 230 volts D.C. circuit, one 70 h.p. motor driving the cutter arms while a smaller motor of 25 h.p. actuates three hydraulic pumps. In addition there are two hydraulic motors and 12 jacks. In cutting, the machine approaches the face with two 7 ft. diameter rotating arms, set at 5 ft. 10 in. centres and turning at a speed of 15.6 r.p.m. Each arm is mounted with six sets of tool holders carrying 26 picks—carbide tungsten points will be tried for the stone cutting—and, with a 4 in. pilot drill leading, breaker rollers follow in the circular kerfs so cut, bursting the annular rings outwards. Shovel plates on the outer

extremities of the arms scoop the cut material into the throat of the conveyor.

Forming the roof and floor lines are two 5 in. kerf 7-line cutter chains, carrying a total of 110 picks. The completed road is 12 ft. 10 in. wide and 7 ft. high with flat roof and floor and semi-circular sides. The 2 ft. broad, single chain type conveyor, running at 320 ft. a minute, has a capacity of four tons a minute and is driven by a hydraulic motor on the swinging delivery end which can also be lowered or elevated.

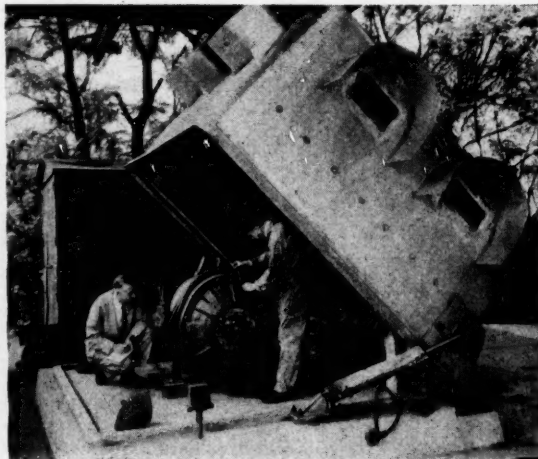
Mounted on caterpillar tracks driven by the other hydraulic motor, the machine has a standard bulldozer gear box. A much wider range of speeds than is normally available on such machines in this country—3 in. a minute to 30 ft. a minute—is obtained by use of gears and a variable volume hydraulic pump. While the higher speeds in this range refer merely to "flitting," the Marietta can cut from the minimum rate up to 5 ft. a minute, depending on the strata encountered.

The main frame of the machine is mounted on four hydraulic jacks and four thrust posts. It can be set to cut at various angles. The caterpillar tracks can also be driven individually to allow of travel around a fairly wide radius. All controls, electrical and hydraulic, are arranged to facilitate easy control by a single operator.

The machine was recently observed in America by Mr. W. A. Spowart, special duties engineer attached to Scottish Divisional Headquarters of the N.C.B., and Mr. J. D. Belloch, assistant to the area chief mechanical engineer in East Fife. They will spend a month on the assembly of the machine underground before conducting the driving of the first road.

AN EXPLOSION TESTING CHAMBER

A new explosion-testing chamber at Pittsburgh, America, to check the safety factor of electrical equipment used in



Interior of the Explosion Gallery

American coal mines, has recently been completed. The new chamber, known as a "gallery," has been installed at the Central Experiment Station and will permit more rapid testing of motors, starters, headlamps, junction boxes, and other electrical parts of coal-cutting machines, loaders, drills, continuous miners, compressors, pumps, and like equipment being operated underground.

If the parts pass the test and a rigid inspection, they receive an explosion-proof rating from the U.S. Bureau of Mines. This means they will not ignite explosive coal dust or explosive mixtures of gas and air in coal mines—providing they are used in a “permissible manner,” as prescribed by the U.S. Bureau of Mines.

The examination required for an “explosion-proof” rating is an exacting one. To determine the safety features of an electrical part, Bureau engineers place it in the large testing chamber and fill both the chamber and the part with a highly explosive mixture of gas and air. A spark plug, installed temporarily in the housing of the equipment being tested, ignites the gas and causes an explosion in the part.

If the explosion in the part ignites the mixture surrounding it, then the part fails the test. Should this occur in an explosive atmosphere in a coal mine, widespread loss of life and property could result. The idea is to keep all possible explosions and ignitions confined within a machine's part.

If the smaller explosion remains within the part itself and does not ignite the surrounding gas, the part receives an “explosion-proof” rating. Each part being tested undergoes at least ten of these explosion tests in the

“gallery” at Pittsburgh and must pass each one before it will be approved.

All electrical parts of a coal-mining machine, for example, must receive an “explosion-proof” rating before the entire machine is rated “permissible” and can be marketed as such by the manufacturer. One permissible loading machine being used in an Eastern United States coal mine is equipped with no fewer than 40 “explosion-proof” parts, including 13 motors. More than 400 “gallery” tests were conducted before this machine received its permissible rating.

The new testing chamber, designed by Bureau engineers, incorporates many novel features and reflects the results of industrial progress. It is strong but light, made of aluminium, and can be tilted quickly on hinges by hydraulic rams to permit easy handling of equipment being readied for tests. Explosions occurring in the gas-filled “gallery” when a part fails the test are released harmlessly through paper diaphragms atop the chamber.

Operation of the gallery is under the direction of E. J. Gleim, electrical engineer and internationally-known authority on the safety testing of electrical equipment.

The Luxemburg Iron and Steel Industry

Since Luxemburg's economy is based almost entirely on iron and steel production, the country is an active supporter of the Schuman Plan. The following article, condensed from *Monthly Statistical Bulletin Vol. 27 No. 8*, published by the British Iron and Steel Federation, gives a brief resumé of the iron and steel industry in Luxemburg as it exists today.

The fall of Germany in 1945 left the iron and steel industry of Luxemburg disorganized, and in that year steel production fell to 259,100 tonnes, the lowest level for the whole of the present century. By 1948, however, production was almost back to normal and in 1951 average monthly output rose to the all-time record figure of 256,400 tonnes. The present equipment of the steel industry in Luxemburg, distributed over seven plants, comprises 31 blast furnaces, 25 basic Bessemer converters and extensive rolling plant.

STEEL IN THE NATIONAL ECONOMY

In its dependence on iron and steel the economy of Luxemburg is unlike that of any other country. The three main distinguishing features of this economical aspect are first, that of the country's total production in terms of value the iron and steel industry contributes approximately 65 to 75 per cent; second, that in terms of value the industry accounts for some 80 to 90 per cent of total exports; and third, that 94 to 98 per cent of total iron and steel production is exported.

The home iron ore deposits are an extension of the Minette field. This French extension is the basis of the Luxemburg iron and steel industry, and owing to the peculiar nature of the ores the Grand Duchy is both importer and exporter of iron ore.

The deposits are split into three sections by the rivers Dudelange, Kail, Alzette, with the portion west of the Alzette having mainly siliceous ores while the two eastern sections comprise a majority of calcareous ores. The best seams are more than 150 ft. thick and are found in the Alzette-Kail section. In both the eastern sections the yellow and grey seams are mainly found, each approximately 12 ft. thick and spaced 4 ft. to 5 ft. apart. The average iron content of the ores is 26 per cent ranging to 32 per cent.

In the smelting process, Luxemburg plants blend the ores in the proportion of two parts of calcareous to one of siliceous, and a large proportion of the blast furnace charge is imported from the Lorraine field. High-grade Swedish ore has also been imported since 1945 in order to reduce coke consumption during the prevailing shortage.

Home ore output during the past 40 years has varied from 3,000,000 to 7,000,000 tonnes per annum, although 1950 production was only 3,845,096 tonnes of which 2,963,331 tonnes were produced in the 11 mines owned by Luxemburg steel companies. Four Belgian steel companies, owning six mines, produced 527,708 tonnes and 15 independent mines produced 354,057 tonnes. Approximately 50 per cent of Luxemburg's mines are opencast properties.

Since the war, export difficulties have been particularly serious and as no coal deposits exist within the Grand Duchy, the whole of the area's industry is dependent upon imports.

THE MODERNIZATION PLAN

Three steel companies between them own the seven plants now in operation. The companies concerned are Aciéries Réunies de Burbach—Eich—Dudenange, Hauts Fourneaux et Aciéries de Differdange—St. Ingbert—Rumelange, and Société Minière et Métallurgique de Rondage. Total annual capacity comprises approximately 3,500,000 tonnes of pig iron, 3,200,000 tonnes of crude steel of which 75,000 tonnes is electric and the remainder Bessemer, and 2,500,000 tonnes of rolled products.

Owing to local lag in technical developments, the industry prepared a modernization and re-equipment programme which is being spread over a number of years. The plan differs from those of the majority of the other iron and steel producing countries in that it does not aim at any increase of existing capacity.

Rather, the aims of the plan are given as first, to reduce costs by rationalization of production, by economy of labour, by mechanization, and by rational utilization of by-products. Second, it aims to extend and modernize rolling equipment, bearing in mind the increasing demand for flat products; and third, it seeks to improve the quality of Bessemer steels. Blast furnace development will mainly take the form of a steady rebuilding of individual furnaces to larger capacity. The remaining old furnaces of small capacity are to be replaced by units of the latest type with a daily capacity of 450 to 500 tonnes each. Ancillary equipment will also be renewed.

THE BRITISH INDUSTRIES FAIR, 1953

The British Industries Fair will this year be held between April 27 and May 8, at Olympia and Earls Court in London, and Castle Bromwich in Birmingham. The products of the heavier engineering industries will be on display at Castle Bromwich, while at Earls Court the Commonwealth display will occupy a site of approximately 10,000 sq. ft. and will contain the exhibits of 23 Commonwealth territories.

The statistics relating to the Fair are interesting. Within the three buildings some 1,000,000 sq. ft. of stand space will display the products of approximately 2,000 manufacturers who represent more than 80 industries. It is estimated that more than 1,200 companies will exhibit in the Engineering, Electrical, Building and Hardware groups.

The following notes present a preview of those products relating to the mining industry which will be displayed by the various manufacturers at the Fair. More detailed descriptions of certain items will be given in our "Machinery and Equipment" columns in subsequent issues. All exhibits are on display at the Castle Bromwich section of the Fair.

Flameproof belting for the mines which has been accepted by the National Coal Board will be shown by the general rubber goods division of *The Dunlop Tyre and Rubber Co.* at Stand D.522. Also on view will be various other types of conveyor belting; transmission and Vee belting, industrial hoses of all types, and silicone rubber products for use over a wide range of temperatures.

One of the new products to be displayed on the stand of *British Ropes Limited* at Stand D.349/244, is a braided wire rope sling consisting of eight steel wire ropes braided together. A provisional patent has been taken out to cover the method of manufacture which differs from that practised in America. A number of advantages are claimed for these slings, and for many tasks they are supplanting ordinary wire rope slings and even chains of fibre rope slings.

John Bedford and Sons Ltd., will exhibit a wide range of equipment, much of it of interest to the mining engineer, on Stand D.417/316. The display will include black and ground bar steels, hollow drill steel, detachable drill bits, T.C. drill steels, as well as general tools and contractors' equipment.

On Stand No. C.513 *British Insulated Callender's Cables Ltd.* are showing a wide range of electric cables and accessories, with particular emphasis on aluminium as a conductor and cable sheathing material.

Among the exhibits will be LT aluminium sheathed, and LT lead sheathed cables with aluminium conductors, high voltage cables including aluminium sheathed oil filled, and aluminium sheathed IP cables as well as aluminium sheathed conductors for overhead lines, jointing aluminium conductor cables in standard cable accessories, mass-impregnated non-draining cables, screened training cables and light weight colliery telephone cables. Other products will include bolted flameproof couplers, industrial power capacitors, copper busbars, copper and aluminium sheets and sections, winding wires and 'Bicaloy' electrodes for electric resistance welding.

On Outdoor Stand 1305/1204 *John Blackwood Hodge and Co. Ltd.* will be showing a large range of equipment which now is built in Great Britain and is available for sterling. The highlight of the Blackwood Hodge exhibition will be the first public appearance of the British-built Euclid Bottom Dump Wagon, now in production at the manufacturers' Glasgow works.

The remainder of the equipment to be shown includes the Carlisle Grader of which the Model 200 has a blade 12 ft. by 24½ in. by ¼ in., a maximum blade pressure of 13,310 lb., and fully hydraulic blade operation, as well as the Euclid Tractor and Scraper unit of 12 cu. yd. payload and 16 cu. yd. heaped capacity, being driven by a 154 b.h.p. diesel engine to a loaded speed of 29 m.p.h. Other exhibits on the Blackwood Hodge outdoor stand will include various ranges of Carlisle angledozing equipment.

Sir W. G. Armstrong Whitworth and Co. (Ironfounders) Ltd., will exhibit "Closeloy" chill and steel rolls on Stand D.235/136. The company's display will include Kue-Ken jaw and gyratory crushers and the Brier infinitely variable gear, as well as a centrifugal filter and rotary finishing machine.

On Stand C.421 *Rapid Magnetic Machines Ltd.* will include examples of new equipment amongst their exhibits. Both permanent and electro magnetic separators will be exhibited and include new 'Rapid' electro magnetic vibratory chute type separators, designed to treat fine powders and other commodities of a similar consistency, that require mechanical motion to precipitate their flow. The company will also exhibit one of their electro magnetic ore separators, capable of treating six minerals at one passing. An entirely new portable foundry separator will be demonstrated for use in jobbing foundries to extract ferrous content from foundry sand.

A comparative departure from the traditional engineering pieces will be displayed on Stand B.516 by *Cuxson, Gerrard and Co. Ltd.*, industrial medical welfare specialists, who will exhibit ambulance room equipment, first-aid cases, stretchers, surgical dressings, "G.P." germicide, penicillin preparations and other similar materials.

A feature of *Metropolitan-Vickers Electrical Co.'s* display on Stand C.510 will be a single-phase on-load tap changer, type H, for use at the 132-kV terminals of a 120-MVA 275/132-kV three-phase auto-transformer with a voltage range of ± 15 per cent in 18 steps. This type of tap changer was developed by Metropolitan-Vickers some years ago for use on fully insulated systems up to 300 kV. It is believed that this is the highest voltage class of on-load tap changer made in this country. Associated with the tap-changer exhibit will be a scale model of one of the eight 120-MVA 275/132 kV three-phase transformers mentioned above.

The wide distribution of the factories of the *Goodyear Tyre and Rubber Co.* in Great Britain and throughout the Commonwealth will be the keynote of the Goodyear exhibition on Stand D.212. The range of products shown on the Company's stand will include conveyor belts, oil industry and industrial hose, transmission belting and Vee belts. Also shown will be the Goodyear dock fendering. Started for use in connection with docks, this range will shortly include boat fendering and fendering for loading bays.

Battery equipment of specialized design for a wide range of applications will be featured on Stand C.114 by *The Tudor Accumulator Co. Ltd.* The two principal exhibits will consist of a "Safetylyte" automatic emergency lighting set, and a Tudor switch tripping unit widely employed for tripping circuit breakers at pressures of 24 or 30 volts.

On Stand B.329 *G. A. Harvey and Co. (London) Ltd.*, will display by actual exhibition and photographs, the Lummus "Multilok" heat exchanger and steel plate manufactures including pressure vessels and autoclaves, as well as fractioning and absorption towers to 3 in. thickness and any diameter and length to Lloyds Class 1 Rules, Insurance Companies and A.P.I.—A.S.M.E. Codes. Cold rolled rings and "Harco" perforated metals and woven wire cloth are included in the company's display.

A comprehensive display of batteries for all purposes will be seen at the display of *Chloride Batteries Ltd.* on Stand C.301. Applications of these units include use for standby power, commercial vehicles, electric trucks, aircraft and similar installations. Emergency lighting pieces and switch tripping equipment are also to be shown.

A new type of pitprop head developed, in co-operation with officials of the N.C.B. by *Hale and Hale (Tipton) Ltd.* will be shown on the Company stand, No. D.609/508. Known as the Hales "Barslide" head, and made in high grade Blackheart malleable iron to British Standard 310/1947. Grade 3, it assists in providing a new type of roof control for underground operations. It is generally for use in conjunction with the hydraulic prop and is so designed that when the load is taken from the roof bar, the prop and head will still take the roof load and the roof bar can then be moved forward without obstruction. The "Barslide" head has stood up to extensive tests and substantial orders have been placed for the National Coal Board. Hales will also be showing for the first time special malleable iron clips for use with the tram-rail type of steel sleeper on light-gauge mine railways.

The British Electrical Development Association will provide an electricity enquiry bureau on Stand C.509/408, which will deal with all matters pertaining to the supply and use of electricity in industry. Demonstrations of some of the most recent applications will be given on the stand.

On Silvertown Stand D.615, the *British Tyre and Rubber Co. Ltd.* will show *Pluvicor* belting, a tire resisting compounded, multi-ply conveyor belting designed for service in the coal-mining industry. It is rot proof and has been approved by the N.C.B. Conveyor and elevator belts for quarries and gravel pits will also be displayed, as well as waterproof conveyor belting for similar duties.

The "Commander" and "Consul" ranges of pneumatic tool hose will be shown as ideal for rough service conditions. The former range is specifically constructed for use in mines and quarries. The type 158 hose is a fabric-ply reinforced unit for most pneumatic tool applications, while B.T.R. coal cutter hose is specially designed for use on coal cutters. The type 40 is a specially developed dust suppression unit.

A feature of the *Westinghouse Brake and Signal Co. Ltd.* display on Stand C.508 will be an actual demonstration of a new method of machining metals by electric spark discharge.

Among items of pneumatic decking plant a combined stop and restarter for use with tubs or mine cars will be shown for the first time. This consists of a large double acting cylinder, the piston tube being fitted with a crosshead which carries a substantial stop designed to engage with axles of tubs or mine cars and a pair of spring return pushing arms.

Other colliery exhibits will include a selection of control and auxiliary valves; an intrinsically safe electro-pneumatic valve and transformer for use in gaseous atmosphere, and a number of double acting cylinders. Also shown for the first time is an entirely new main cage resilient axle catch.

Electromagnets Ltd. will display a comprehensive range including a lifting magnet, swarf separator, high intensity chute type magnetic separator and various types of permanent magnetic separators, on Stand C.605.

An exhibit of particular interest will be a large high intensity overband type of magnetic separator, many of which are in use for the salvaging of tins and general ferrous scrap from household refuse, and removal of general tramp iron from products in process such as coal, limestone, foundry sand or glass cullet. This type gives a continuous discharge of all collected iron and is easy to apply over existing conveyors, generally requiring very little alteration to existing layouts.

Holman Bros. Ltd. will exhibit on Stand outdoor 1203/1102. The company's display will include stationary and portable air compressors, rock drills and accessories, air motors and winches and pneumatic tools and appliances. The emphasis will naturally be laid on the mining and quarrying industries.

Electric motors and stator/rotor units will be shown by *The British Thomson-Houston Co. Ltd.* on Stand C.511/410. The display will include also F.H.P. motors, control gear switchgear, high-speed D.C. circuit breakers, industrial heaters and electronic equipment. Precision gearing and "Mazda" lamp and lighting equipment for many applications will also be exhibited.

Complete equipment for optical methods of inspection, gauging and measurement will be displayed by *Hilger and Watts Ltd.* on Stand D.321. The company's exhibit will include profile and surface projectors, templates, autocollimators, angle dekkors and slip gauges and other equipments.

Denver Equipment Co. Ltd. will display a Dillon floating circle vibrating screen and 2 in. Denver suction pressure diaphragm pump on Stand D.752.

On Stand D.755/654 *Keith-Blackman Ltd.* will exhibit a range of Tornado fans. These will include the No. 12 Centrifugal fan, a special arrangement suitable for handling gases at temperatures up to 650° F., and the No. 27 Centrifugal fan, a specially constructed centrifugal unit for handling relatively clean gases at temperatures up to 650° F. to 750° F. Other units shown will include Nos. 10 and 14 Paddle Wheel types, suitable for moving all types of finely divided material.

Other propeller and blowing units will be shown, as well as

unit heaters and the M.P. type 3 fan suitable for local ventilation in tunnels and the like. Fans particularly designed for surface and internal installation include the 6 in. extravagant window fan, the 6 in. axial ring mounted, and the 16 in. axial ring mounted.

Conveyor belting and industrial hose for all purposes will be displayed by *Dominion Rubber Co. Ltd.* on Stand D.342. Floorings, sheet packing, extrusions, washers and moulded goods will also be shown, as will mines ventilating tubing.

The D.P. "Kathanode" range of traction cells, designed for the propulsion of electric industrial trucks, road vehicles and locomotives, will be shown by *The D.P. Battery Co. Ltd.* on Stand C.715. A recent development has been the introduction of "Porvic" ribbed separators. A further special feature of "Kathanode" cells is the provision of special insulating rods which fill the spaces between the separators at the edges of each negative plate. This step has entirely obviated the risk of short circuits arising from the formation of spongy growth.

On Stand D.605 *James Howden and Co. Ltd.* will exhibit mechanical draught radial and axial flow mine fans, ventilating fans, air preheaters, dust collectors, turbines, compressors and like equipments.

Imperial Chemical Industries Ltd. (Metals Division) on Stand D.409/308 and the I.C.I. Plastics Division on Stand D.619, will show non-ferrous alloys in a variety of manufactured forms. Aluminium alloys in various forms will also be displayed, while the plastics division will exhibit a wide range of thermosetting and thermoplastic raw material for industry.

On Stand D.319, *Wilkinson Rubber Linatex Ltd.*, will exhibit Linatex lined material handling, mining and chemical plant and equipment, including pumps, ball mills, valves, hose, coal anti-breakers, tank pipe and shot-blast cabinet lining.

The stand of *The General Electric Co. Ltd.* C.503/402 tells the story of lighting. A section of the stand is devoted to an historical survey which traces the evolution of the lamp from the earliest carbon filament lamp through the single coiled tungsten filament to the coiled filament lamp. In addition the numerous components which make up the modern filament lamp are explained. The story of the discharge lamp is outlined by a working model of a Geisler tube operating from a spark coil, a demonstration showing the effect of coating coloured fluorescent powders on the inside of tubes containing suitable gases, and a number of models which exemplify the modern discharge lamp as used in street lighting.

On Stand D.122, *Wilkins and Denton Ltd.*, will exhibit men's safety boots and shoes with internal and external steel toecaps made to British Standards Institute Specification. Women's safety shoes with internal steel toecaps will also be shown.

The India Rubber, Gutta Percha and Telegraph Works Co. Ltd. will show ebonite rod, sheet, tube, mouldings, components and fabricated assemblies on Stand D.615. Transmission and conveyor belting, industrial hoses and primary batteries will also be displayed.

Vickers VR180 tractors, powered by Rolls-Royce and shown with matched equipment will be exhibited by *Jack Olding and Co. Ltd.* on Stand outdoor 1347/1246. The display will include also Onions scrapers, rippers and power control units, the Galion Model 118 motor grader, Barber-Greene Olding material handling equipment and Hendrix dragline buckets.

On Stand C.613/512 *The English Electric Co. Ltd.* will emphasize the Company's mining division, among other departments. The mining division shows a working model of a miniature depth indicator, for use with a geared A.C. winder with twin motors, each rated at 1,980 h.p.

The miniature precision indicator patented by the Company, combines, in a single unit, a circular dial for position indication, with an annulus in the same plane to imitate the drum cheek. The annulus rotates at drum speed and can be marked to correspond to the drum cheek. The indicator is designed for desk or panel mounting, about 2 ft. 6 in. from the driver, and the accurate decking demanded, when hoisting with cages, can be achieved without reference to the drum.

METALS, MINERALS AND ALLOYS

In the short pre-holiday week the news of a more accommodating attitude of the Chinese, and possibly also of the Russian, Governments towards the United Nations had an immediate effect on the metal markets and some weakening in prices was widely reported, especially in the tin market. How much of this was due to the slackening of business in view of the Easter Holiday and how much to the hope that international tension is likely to diminish it is impossible to say.

COPPER—The price situation in the U.S. appears to be clarifying. Kennecott, Anaconda, and Phelps Dodge have agreed on a uniform price of 30 c. per lb. for domestic copper, though customs smelters are still asking 33 to 34½ c.

With the clean-up of the April allocation of domestic copper in the U.S. consumers are reluctantly turning to foreign copper generally quoted at 34½-36½ c. The French Metal Import and Distribution Agency has followed the lead of The Ministry of Supply last week and cut the electro price by 5 Frs. to Frs. 285 per kilo. The cut is said to reflect the improvement in French copper supplies which permitted the lifting of restrictions on the use of the metal and its alloys at the beginning of the month.

The strike started at the A.S. & R.'s Garfield Smelter on Wednesday of last week originated with the Clerical Workers Union. Negotiations under the auspices of the NLRB are proceeding, but no intimation that the strike is over has so far been received.

The Copper Workers Confederation in Chile was expected to declare a general strike at the beginning of the week of all copper miners in sympathy with the Chuquicamata workers, but it was postponed for a week at the last moment and the Minister of the Interior, who is presiding at the negotiations, is hopeful of a satisfactory outcome.

Granby Consolidated, the B.S. producer, has reached an informal agreement with the U.S. Government for the sale of certain tonnages of copper at 30 c. per lb. The annual report of the Company says that this arrangement had been accepted because of "informed opinion in the metal industry that there would, during the next three or four years, be a substantial increase in world output up to around 250,000 s.tons a year." Should copper prices fall to the U.S. former level of 34½ c. per lb. Granby and other high cost producers might have to suspend production. The 30 c. price, therefore, was hedge against a dangerous risk. Ore reserves at the Copper Mountain mine at the end of last year were computed as 3,824,000 s.tons averaging 0.95 per cent Cu.

The Revere Copper and Brass Company estimates in its annual report that production by the U.S., Canada, Chile, Rhodesia, Belgian Congo and Australia should show an increase of 165,000 s.tons during the current year, with a potential increase up to 530,000 s.tons by 1956. The major increase was likely to come in 1954 and reach a peak in 1955 or early in 1956.

Japanese production of electro in February was 6,431 tonnes as compared with 6,220 tonnes in January. The Northern Rhodesian production in January was 24,264 tons (electro 12,564; blister 11,700). South Africa is reported to be offering 5,000 tons of blister for 2nd quarterly delivery.

It is hoped to salvage some 1,500 tons of copper from the sunken Dutch liner *Klipfotein* sunk off the Zanzibar coast; 600 tons have already been recovered.

LEAD—The uncertainty of the international outlook has affected the lead market both here and in the United States. Metal Exchange prices on Tuesday fell to £86½-£86¾ for prompt and £84½-£85 for three months, but recovered on second change somewhat. In the United States too, demand has fallen off, though New York spot is still called 13.50 c.

TIN—Tin has fallen heavily on the Metal Exchange this week, and in the United States it continues to encounter consumer resistance.

The tin market had to encounter not only the possibility of a relaxation of Chinese hostility, especially in Malay and Siam, but the unfavourable construction placed upon the accounts of the Tin Study Group's discussions so far as any

immediate results are to be expected. It is, of course, possible also that the U.S. delegation may have expressed views or made disclosures of policies of the Administration, e.g. on the continuance of stockpiling, which were interpreted as unfavourable though this is merely speculation. Whatever may be the importance attributable to the various factors, the fact remains that tin prices, after having been relatively stable for a considerable period, have this week fallen so much as to make reduction of output in some fields a possibility and so help to correct over-production.

The Tin Study Group terminated its meeting in London on Friday, March 27. A statement, whether to be regarded as the official communiqué or merely an advance announcement, was published subsequently by Reuter's Agency. It is not a very consoling statement for those who may have expected stimulating news. A working party is to be set up to consider proposals for stabilizing the world tin market with June 15 next the date fixed for its first meeting. It will consider whether conditions exist for resumption of the Geneva Conference which broke down towards the end of 1950 and, if it thinks well, to report to the Steering Committee of the United Nations Geneva Conference with a view to the proposals then put forward, and any subsequent ones, being accepted for further action. In any case with the measured pace of international action these preliminaries must take a considerable amount of time. Perhaps the most significant statement in the communiqué is that estimates of output and consumption were made but suppressed.

Some surprise has been expressed at the setting up at this time of a working party as the attitude of the United States in regard to the similar agreement on rubber is not considered an encouraging factor, especially, it might be added, with the recollection of the policy of the late U.S. Administration and the conclusion of the Paley Report.

The Bolivian Ambassador in the U.S., Sr. Victor Andrade, has stated in Washington that Bolivia is continuing to negotiate with the U.S. on proposals for settlement to compensate American stockholders in the nationalized tin mines, and on a long-term purchasing contract between the two countries; while negotiations continue there could obviously be no agreement for signature. The Ambassador has requested the United States Government to intervene in the matter of a Supreme Court Order attaching some \$1,500,000 of Bolivian funds in New York Commercial banks, the attachment being at the instance of an unspecified U.S. Corporation. The attached funds, he said, are the product of the sales of nationalized minerals and therefore the property of the Bolivian Government.

Shipment of Indonesian concentrates in February were equivalent to 2,112 tons of metal, and for the first two months of the year totalled 4,657 tons as against 4,280 tons in the first two months of last year.

ZINC—This metal also has been affected by the change in the international outlook. At first session at the Metal Exchange on Tuesday prompt was done at £76¼-£76½ but three months was slightly higher at £76½ to £76¾. As was the case with lead the market recovered somewhat on second change. In the United States where the quotation is still 11 c. E. St. Louis demand has largely ceased.

NICKEL—The International Materials Conference allocated an increased amount of nickel and nickel oxides for the second quarter of the year, the total being 37,800 tonnes as compared with 37,273 tonnes in the first quarter. The increase is due to the inclusion of 500 tonnes of oxides from the Nicaro plant in Cuba and again of some 200 tonnes in the estimate of world production. The United States allocation is 25,495 tonnes (25,013 in the first quarter) and the U.K. allocation is 5,526 (5,433 in the first quarter). Minor increases were made to plants in France, West Germany, Italy, Sweden and Switzerland.

The U.S. Defence Materials Procurement Agency announces that a new contract has been made with the Falconbridge Nickel Mines for the purchase by June 30, 1962, of 50,000 tons or more of nickel, 1,000 s.tons of cobalt by the same date, and a maximum of 26,000 s.tons of refined copper by December 31, 1958.

QUICKSILVER—The United States report quoted last week that Great Britain would follow the example of Washington and stockpile quicksilver has been received with incredulity here as the British Government is believed to already hold substantial quantities of the metal. Moreover, if the U.S. London office has been instructed to buy it is thought unlikely that this would be effected here as the Spanish and Italian producers prefer to sell direct for dollars, and in any case agents in Great Britain would not have the necessary stocks to meet any large orders.

TUNGSTEN—Marketwise there is nothing fresh to report. It is announced from Holland that the chief industrial engineer at the State mines will leave for South Korea next month to organize the resumption of coal and wolfram mining in that territory. He has been appointed head of the Mines Section of the United Nations Korean Relief Agency. The difficulties which Portuguese producers are now facing as a result of the continuance of the special export duty, since the price of wolfram has dropped so much, are described by our correspondent in Oporto elsewhere in this issue.

Iron and Steel

Although the inevitable interruptions of the Easter holidays tread closely upon its heels, the beginning of the second allocation period is a welcome event to nearly all classes of iron and steel users. To the relatively few who have received the whole of their licensed tonnages in the first quarter the opportunity of renewing contracts on a possibly more generous scale; to the many who have had to rub along with smaller tonnages than they were entitled to expect is offered the hope of prior consideration in the second period. Deliveries have certainly fallen short of expectations notwithstanding the spectacular expansion of outputs which has been achieved and most makers have had to carry forward a considerable burden of uncompleted contracts. This has compelled them to limit their acceptances of orders for the ensuing quarter. However, the rising trend of production has not been halted. Most of the plants will be working as usual this week-end and the progressive improvement of supplies is promised until the summer holidays intervene.

The flow of scrap to the steel works is maintained on a fairly even keel but more pig iron is required and to cope with this need a blast furnace in the Derbyshire area has been changed over to the production of basic iron. This will further limit the already restricted supply of high phosphorous iron and for a time foundries may have to eke out deliveries by raiding their somewhat limited stocks.

Makers of finished iron have well-filled order books and can contemplate with equanimity the rather quieter trend of the market since prices were advanced 10s. per ton last week.

Re-rollers are still very short of billets which are being imported in considerable quantities from France and Belgium. So far as available supplies will permit they are also making extensive use of re-rolling scrap whilst sheet mills are sustaining their activities by the liberal use of imported sheet bars.

Home demand for flat steel products in particular and also for sections, channels and joists, is very extensive and in addition, brisk Transatlantic inquiries are circulating for sheets. Some substantial American orders have been booked and more Canadian business is on offer.

The London Metal Market

The situation in the copper market has become somewhat confused, and supplies outside the U.S.A. appear to be well in excess of demand. It is understood that the Chileans would be willing to dispose of a large quantity over a period to this country, but it is unlikely that the British Government will be interested in the proposition. The New York Commodity Exchange is making preparations for the early resumption of trading in copper futures. This being so, it can be assumed that the sooner trading can commence on the London Metal Exchange the better, and the Ministry has already asked the Rhodesian producers whether they would accept three months' notice instead of the six months' required by the present agreement—no doubt with this end in view.

It has now been reported from Bolivia that negotiations for a new contract for the sale of tin concentrates to the U.S.A. are in an advanced stage. The International Tin Study Group met in London last week and reported that it would set up a

Working Party for the consideration of the stabilization of the tin market. Here the market has been dull with consumers' demand rather slow, and the firmer tone apparent at the end of last week has not been maintained: in fact the market has declined very steeply, presumably in view of the possible re-opening of armistice negotiations in Korea. The Eastern market has also declined. The Eastern price on Wednesday was equivalent to £918 per ton c.i.f. Europe.

In lead the demand from consumers has been somewhat meagre, but the tightness of metal for prompt delivery continues, although the backwardation between current month settlement and three months' settlement has shown some diminution with the change of the current month from March to April. The market early this week dropped appreciably and would seem to have been influenced by the possibility of armistice talks in Korea.

Zinc has followed much the same course as lead, and this is attributable no doubt to more or less the same reasons.

Closing prices and turnovers are given in the following table:—

	March 26		April 1	
	Buyers	Sellers	Buyers	Sellers
Tin				
Cash	£937	£939	£930	£935
Three months	£931	£932	£880	£885
Settlement				
Week's turnover	235 tons		495 tons	
Lead				
Current month	£93½	£93½	£86½	£87
Three months	£89½	£89½	£84½	£85
Week's turnover	5,450 tons		4,550 tons	
Zinc				
Current month	£80½	£80½	£76½	£76½
Three months	£80½	£80½	£77	£77½
Week's turnover	5,725 tons		3,825 tons	

APRIL 1 PRICES

COPPER

Electrolytic £280 0 0 d/d

TIN, LEAD AND ZINC

(See our London Metal Exchange report for Thursday's prices)

ANTIMONY

English (99%) delivered,
10 cwt. and over £225 per ton
Crude (70%) £210 per ton
Ore (60% basis) 20s. — 22s. nom. per
unit, c.i.f.

NICKEL

99.5% (home trade) £483 per ton

OTHER METALS

Aluminium, £161 per ton
Bismuth
(min. 4 cwt. lots) 17s. lb.
Cadmium (Empire), 14s. 4d. lb.
Chromium, 6s. 5d./7s. 6d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.o.z.
Iridium, £60 oz. nom.
Magnesium, 2s. 10½d. lb.
Manganese Metal (96%-98%)
£280/£295
Osmiridium, £40 oz. nom.
Osmium, £65/70 oz. nom.
Palladium, £7 15s./£8 10s. oz.
Platinum, £27/£33 5s.
Rhodium, £42 10s. oz.
Ruthenium, £25 oz.
Quicksilver, £70 10s./£71
ex-warehouse
Selenium, 30s. 6d. nom.
per lb.
Silver 74d. f.o.z. spot and f'd.
Tellurium, 18s./19s. lb.

ORES, ALLOYS, ETC.

Bismuth 40% 6s. 9d. lb. c.i.f.
30% 5s. 6d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (lumpy) £14 18s. per ton c.i.f.
" " (concentrates) £14 18s. per ton c.i.f.
" " Refractory £14 10s. per ton c.i.f.
Baluchistan Metallurgical .. £16 11s. 6d. per ton c.i.f.
Magnesite, ground calcined .. £26-£27 d/d
Magnesite, Raw £10-£11 d/d
Molybdenite (85% basis) .. 103s. 10½d. per unit c.i.f.
Wolfram (65%) World buying 310s. - 320s.
352s. 6d. Selling
Scheelite World buying 290s. - 300s.
342s. 6d. Selling
Tungsten Metal Powder .. 30s. 8d. nom. per lb. (home)
(for steel manufacture)
Ferro-tungsten 25/3-25/9 nom. per lb. (home)
Carbide, 4-cwt. lots £35 13s. 9d. d/d per ton
Ferro-manganese, home .. £49 15s. 0d. per ton
Manganese Ore U.K. 6s. 1d. per unit
(48%-50%) 2s. 7½d. per lb. basis
Brass Wire 2s. 1½d. per lb. basis
Brass Tubes, solid drawn .. 2s. 1½d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

The gilt-edged market this week closed with a firm trend. The greatly improved balance of payments figures were encouraging. On the debit side, however, there is now an overall revenue deficit of £436,000,000. Buying of gilt-edged may well be supported by hopes of an eventual reduction in the bank rate, and a distrust of many equity shares at to-day's levels.

In the Kafir market, finance houses had an erratic week. Interest was rather limited, but the success of the Consolidated Goldfields new issue encouraged this company's shares. The Board has offered 300,000 ordinary shares at 48s. to existing holders and it is understood that the lists were over-subscribed. There has been some quiet buying of the shares of this group. Not only have they large interests in many mines which are rapidly advancing towards full production, but it is hoped that they benefit from some tax concessions in the budget. Goldfields are, of course, a U.K. registered concern. Anglo-American Corporation were easier despite the higher profit figures. The dividend is unchanged at 60 per cent. The profit after tax was £3,015,000, compared with £2,894,000 for the previous year.

Interest in individual mines was slightly more active despite the fact that the current account covers the period of the U.K. budget, the South African general election, and the Easter holidays. Van Dyk were harder on vague development rumours. The West Rand Consolidated quarterly figures are expected in two or three weeks' time and there were some optimistic buying of the shares. Western Reefs improved on the new issue announcement. The company announced that equipment delays have set back the uranium production plans but it is hoped that operations would begin in the second quarter of this year. Rose Deep hardened. The directors are making a capital cash return of 1s. per share. The mine is an old one and the Board state that the money is in excess of capital requirements. Daggafontein hope to commence uranium production this month.

The coming quarterly figures should be full of interest. The first effect of uranium production on the profits of certain companies should begin to show itself and other concerns, such as Doornfontein should produce good gold results. Vaal Reefs announced that they would start developments on reef about the middle of this year.

In the West African market, there was little interest or change. Exceptionally, Lyndhurst Deep rose on rumours that good results would be announced in the report due during the next few days. Konongo hardened in sympathy.

Diamond shares were flat. Peace moves in Korea affected this market. Diamonds are a luxury commodity used for hoarding in times of inflation. In addition, the end of the Korean war might bring about a cessation of stockpiling of industrial stones. Nevertheless, De Beers now have many interests outside diamonds.

Copper shares were also weak. The Korean truce discussions, coupled with the already doubtful metal price position, brought about a fair amount of selling. It is noteworthy that the government are taking steps to hasten a return to free trading.

Tin shares were easier for much the same reason as copper and diamonds. The price of the metal has come back sharply, although share prices have been assisted by recent satisfactory dividend results and the long-term prospects for the better mines as world production decreases. The immediate outlook is less certain as stockpiling of the metal ceases. It should also be noted that tinplate manufacturers have large stocks in hand which are unlikely to be liquidated at short notice.

Lead/zinc shares were also friendless. The Rhodesian Broken Hill dividend, totalling 1s. 3d. a share against 3s. 3d. a share last year, disappointed holders. While a considerable reduction had been anticipated, market hopes were pitched higher than this. The current prices of lead and zinc encourage a cautious outlook in this market.

FINANCE	Price Mar. 31	+ or - on week	O.F.S.	Price Mar. 31	+ or - on week	MISCELLANEOUS GOLD	Price Mar. 31	+ or - on week	TIN (Nigerian and Miscellaneous contd.)	Price Mar. 31	+ or - on week
African & European...	24 1/2	XD	Freddie's	15 7/8	-3d	(contd.)	26/6		Geveer Tin	13/-	-3d
Anglo American Corp.	62	-1	Freddie's N.	15/-	-3d	St. John d'El Rey	29 3/4	-7 3/4	Gold & Base Metal	4/4 1/2	
Anglo-French	18/9	-3d	Freddie's S.	15/-	-3d	Zams			Jantar Nigeria	14 7/8	
Anglo Transvaal Consol.	27/6	-1 1/3	F. S. Geduld	3 1/2	+ 1/2	DIAMONDS & PLATINUM			Jos Tin Area	13/-	
Central Mining (El shrs.)	33/9		Geoffries	19/9	-6d	Anglo American Inv.	4 1/2		Kaduna Prospectors	3/3	
Consolidated Goldfields	49/6	+6d	Harmony	25/9		Casils	22/9	-1 1/2	Kaduna Syndicate	3/6	
Consol. Mines Selection	26/3	+1 1/2	Lorraine	10/-	-3d	Cons. Diam. of S.W.A.	4 1/2		London Tin	5 3/4	
East Rand Consols	3/10 1/2		Lydenburg Estates	13/9		De Beers Deft. Bearer	64/9	-2 1/2	United Tin	3/-	
General Mining	4 1/2		Merritspruit	6 3/4	-1d	De Beers Pfd. Bearer	14 1/2	-1			
H.E. Prop.	40 7/8	-7 1/2	Middle Wits	18/6	-3d	Pots Platinum	8 7/8				
Henderson's Transvaal	8/-	-6d	Ofits	41/10 1/2	-7 1/2	Watervaal	15/6 1/2		SILVER, LEAD, ZINC		
Johnnies	3 1/2		President Brand	23 1/2	+4d				Broken Hill South	42/6	-1/3
Rand Mines	4 1/2	+ 1/2	President Steyn	24/-	+1 1/2	COPPER			Burma Mines	2 1/2	+3d
Rand Selection	36/10 1/2		St. Helena	14/6	+1d	Chartered	53/-	-2/3	Consol. Zinc	26 3/4	-1 1/2
Strathmore Consol.	42/3	-10 1/2	Virginia Ord.	14/-	+1d	3d Esperanza	4 1/2	+1 1/2	Lake George	11/8	-3d
Union Corp. (2 1/2 units)	31/3	+3d	Welkom	22 7/8	-1 1/2	Indian Copper	4/6		Mount Isa	35/-	-2/6
Vereeniging Estates	35/-		Western Holdings	3 1/2	+ 1/2	Messina	6/-		New Broken Hill	19/3	-1/-
Wits	25/-					Nchanga	3 1/2		North Broken Hill	53 1/2	-1/10 1/2
West Wits	46/3	+7 1/2				Rhod. Anglo-American	50/6	-2/-	Rhodesian Broken Hill	11/6	-1/4 1/2
						Rhod. Katanga	10/-	-1/9	San Francisco Mines	27/6	-6d
						Rhodesian Selection	15/6	-1/3	Uruwira	3/10 1/2	
						Rhokana	18 1/2				
						Rio Tinto	22 1/2		MISCELLANEOUS		
						Selection Trust	13/10 1/2	-10 1/2	BASE METALS & COAL		
						Tanks	61/3	-3/4	Amal. Collieries of S.A.	45/6	
						Thariss Sulphur Br.	48/9	-1/3	Associated Manganese	50/-	-6d
									Cape Asbestos	21/-	
									C.P. Manganese	58/-	-1 1/2
									Consol. Murchison	30/-	-1d
									Mashaba	6	
									Natal Navigation	3 1/2	+ 1/2
									Rhod. Monteleo	10/3	-4 1/2
									Turner & Newall	53/3	-6d
									Wankie	14 7/8	-3d
									Witbank Colliery	3 1/2 XD	
									CANADIAN MINES		
									Dome	\$37 1/2 XD	
									Hollinger	\$27 1/2	
									Hudson Bay Mining	\$39	
									International Nickel	\$78 1/2	
									Mining Corp. of Canada	\$44	
									Noranda	\$140	-2
									Quebec	\$6 1/2	
									Yukon	4/-	-6d
									OIL		
									Anglo-Iranian	5 1/2	+ 1/2
									Apex	42/6	+7 1/2
									Attock	28/-	-1 1/2
									Burmah	46/-	+1 1/2
									Canadian Eagle	34/10 1/2	+1 1/2
									Mexican Eagle	20/6	
									Shell (bearer)	4 1/2	+ 1/2
									Trinidad Leasehold	28/9	+6d
									T.P.D.	26/3	
									Ultramar	24/-	-7 1/2

COMPANY NEWS AND VIEWS

Anglo American Strengthens Reserves to £18,000,000

The preliminary profit statement issued by Anglo American Corporation of South Africa covering operations for the calendar year 1952 announces the recommendation of a final dividend of 4s. per share making the total distribution for the year 6s. per 10s. share. This is the same as for the preceding year but the payment of the final dividend of 40 per cent was paid on an issued capital increased to £3,431,727 in May last by a one-for-ten rights issue at £6 10s. per share.

Subject to final audit, profit for the year after providing for taxation, was £3,015,000 compared with £2,894,000 in the preceding year, an increase of £121,000. The sum of £4,400,000, which included £3,636,300 representing the net premium received in respect of the share issue in May last, was allocated to general reserve against £850,000 in 1951. The latest transference to general reserve raises that account's total to £17,900,000.

Sir Ernest Oppenheimer is chairman. Further details are given on page 402 of this issue.

Daggafontein's Imminent Uranium Production

As for several years past, more work has been done on the Kimberley Reef of Daggafontein Mines than on the Main Reef Leader. It was for treating ore from the former that the new reduction plant, which started up in 1949, was installed. Total development footage last year was 65,047 ft., of which 35,651 was accomplished on the Kimberley. Payability was better, 46 per cent (against 43.4) as also the value, 17.80 dwt. (13.27 dwt.). Both pay ratio and value of the Main Reef Leader were also better (48.4 per cent, value 19.66 dwt.).

Milling was slightly lower at 2,788,000 tons, as also yield 4.76 dwt., while revenue dropped by 3s. to 60s. 10d. per ton. Uptrend in working costs of 1s. 9d. per ton was not so steep as in the previous year but they nevertheless reached a peak figure—25s. 11d. per ton. Total working profit dropped by £723,341 to £4,869,401, but it did not necessitate a scaling down of dividend which was again 6s. per share, absorbing £2,100,000. Government share of profits amounted to £817,509 (£1,114,657), taxes £1,447,095 (£2,175,621), a sum of £400,000 was transferred to Uranium reserve and capital expenditure called for £83,630 (£281,953). The balance forward was slightly higher at £311,685.

The additional amount received from sale of gold at enhanced prices was £208,292 against £415,119 the previous year.

The construction of the uranium plant was delayed by late deliveries of material but its start up is now imminent, and as the chairman in his speech accompanying the Report says, it will be a source of additional profit to the company.

Recalculation of the ore reserves gives a figure of 13,982,700 tons (14,430,000), the value being the same, 5.73 dwt. The total includes 5,355,200 tons of 6.17 dwt. on the Kimberley reef series.

East "Dagga's" Restricted Milling

The reduced native labour supply did not permit East Daggafontein to operate at full capacity at any time during 1952. Tonnage milled of 1,140,500 against 1,183,000 tons was the lowest for three years, yield and revenue were down, costs rose and profit decreased. The yield per ton was 3.55 dwt. against 3.66 and working costs rose to the highest since the company started milling in 1939, viz. 31s. 3d. per ton. Profit per ton dropped by 4s. 6d. and the total to £812,764 against £1,111,834. This necessitated the dividend being reduced to 2s. 1½d. against 2s. 9d., which absorbed £396,313. Government and Provincial taxes called for less £387,637 (£564,614) and after meeting other small outgoings, the unappropriated profit was £196,355. Gold premium brought in £66,676 compared with £134,226 the previous year.

Both the Main Reef Leader and the Kimberley Reef are being worked; on the former development was less than in the previous year, 28,718 ft., and of the footage sampled, 29.5 per cent was payable averaging 23.73 dwt. On the Kimberley, 27,026 ft. was accomplished and 20.5 per cent of that sampled was payable averaging 53.50 dwt. This value was higher than

that of the previous year (51.04 dwt.), though pay percentage was not quite so good, and the width narrowed to 5.27 in., with the result that the in.-dwt. figure of 282 went against 349 in.-dwt. the previous year.

The tonnage of ore reserves is lower by 324,000 tons at 4,360,300 tons of a value of 4.43 dwt. (against 4.51 dwt.). The reserve includes 1,263,200 tons on the Kimberley Reef, averaging 5.56 dwt. (5.31 dwt.).

"Sallies" Jubilee Year

Although the South African Land was registered in 1903 milling did not start until 1938. Since then a total of nearly 17,000,000 tons have been crushed while dividends, which have been paid every year, have slightly exceeded £7,007,000.

The 1952 results were not so good as for the previous year. Tonnage milled decreased by 63,000 to 1,317,000 tons; yield rose from 3.51 dwt. to 3.60 dwt. and revenue from 45s. 9d. to 46s., but the benefit of this was lost in higher working costs. They increased from 29s. 7d. to 32s. 4d. and the resulting profit per ton at 13s. 7d. was 2s. 6d. lower. Total working profit decreased from £1,114,142 to £895,191 which necessitated the dividend being reduced to 3s. 6d. against 4s. 3d. absorbing £433,125. Taxation and Government share of profits called for £401,387 (against £525,472). Net profit came out at £500,959. After providing £28,252 for capital expenditure and meeting all appropriations, the forward balance was £172,807 against £145,189. Premium gold brought in £72,735 compared with £149,713.

Footage of development was below that for the previous year being 76,848 against 84,119 while payability of the 47,745 ft. sampled was 38 per cent, averaging 13.50 dwt. This went against 42.6 per cent and value 12.22 dwt. the previous year. The company is one of the few to be able to report an increase in ore reserves; at the end of the year they amounted to 3,424,000 tons (3,324,000), with an average value of 5.01 dwt. (4.71) over a stoping width of 42.22 in., equivalent to 212 in.-dwt. (199).

In addition to its mining area, the company has freehold properties and mineral rights over a number of farms in various districts of the Transvaal, Natal and the O.F.S.

Western Reefs to Increase Capital

In order to meet its commitments in connection with the building of houses for its employees and to meet capital expenditure, Western Reefs proposes to increase its capital from £1,750,000 to £2,000,000; it is also seeking increased borrowing powers in order to arrange for temporary loan facilities. Resolutions are being put forward at an Extraordinary General Meeting this month after the Annual Meeting when the 1952 Report will be submitted. This states that an increased tonnage of ore was dealt with at the mine last year—1,345,000 as compared with 1,222,000. Yield was lower at 4.17 dwt. and revenue per ton was 4s. 1d. less at 53s. 3d. Working costs rose by 1s. to 33s. 9d. and the resulting profit per ton at 19s. 6d. showed a decrease of 5s. 1d. The working profit dropped from £1,505,180 to £1,310,730, but it enabled a distribution of 2s. 6d. to be made, for the third year in succession, absorbing £875,000. As the allowances for 1952 in respect of redemption of ordinary and uranium capital expenditure were in excess of profits for the year, no liability for Government share of profits and taxation was incurred. After transferring £200,000 to Uranium Reserve Account and appropriating £20,409 for Capital Expenditure, there was a balance of £280,458. Premium gold brought in £84,023 against £159,900.

The No. 3 shaft system, which is a joint venture with Vaal Reefs, made good progress. During the year development in the mine amounted to 79,133 ft. and of the footage sampled, 42.6 per cent was payable averaging 14.06 dwt. In addition, 6,693 ft. of work was accomplished on the adjoining farm. Goedgenoeg, over which the company holds rights, and sampling averaged 22.32 dwt. A small increase in ore reserves is recorded: the figure of 4,703,000 tons of 5.03 dwt. comparing with 4,602,700 tons, value 5.08 dwt.

The Company's uranium plant should come into operation during the second quarter of this year.

Development Prospects at Vaal Reefs

Good progress was made on the No. 3 shaft system at Vaal Reefs during 1952. The property is situated in the Klerksdorp district of the Far Western Rand adjoining that of Western Reefs. It is jointly with that Company that the No. 3 shaft was sunk and reached its final depth of 4,093 ft. in 1951. Since then work on its equipment has been going ahead and was completed last year. It has been in full operational use and the main objective of work now is to drive to the site of the Company's own shaft system. Station cutting at various levels has taken place and development on the reef is estimated to start towards the middle of this year. So far a haulage has been driven on the 4,000-ft. level in country rock and has reached the site of the Sub-Vertical shafts. When the hoist chamber and other necessary works are completed, probably early next year, a decision will then be taken regarding the sinking of the No. 1 Vertical Shaft from the surface. This is the programme which the Consulting Engineers agreed some time ago for expediting development and conserving expenditure.

During the past year £328,737 was spent on shaft sinking and equipment and £8,493 on general capital expenditure. It is estimated that £750,000 will be called for to cover the cost of underground development from No. 3 shaft and work in connection with the shaft sinking programme. Arrangements have been made with the Anglo American Corporation to borrow these funds and the necessary powers are being sought to give effect to this.

Nothing has yet been done in connection with the plant as gold production is not scheduled to commence until 1956, by which time the Vertical and Sub-Vertical Shafts should be completed and in commission. The programme in connection with them has been designed to effect a considerable saving in capital expenditure without any loss of time in date when production can commence.

Rose Deep Repays Capital

Although some surprise was shown at the intention of Rose Deep to return 1s. per share capital to shareholders, it is nevertheless regarded as the proper course. This old member of the Central Mining group goes back to 1897 and has only once during the past two decades missed paying a dividend. Repayment of the capital "in excess of the wants of the company," as the 1952 Annual Report says, at this stage in the life of the mine, is considered opportune.

In spite of the acute labour position, the mine was able to mill 983,000 tons of ore (against 993,000 tons the previous year). Grade was slightly lower at 2.802 dwt., but, as the Report states, any fall in tonnage causes a corresponding rise in costs which in turn calls for an increased grade in order to maintain reasonable profits. These showed a big drop last year and at £157,500 were less than half those for 1951 when they amounted to £329,141 and enabled shareholders to receive a dividend of 5s. 3d. per share. Last year the amount was scaled down to 3s. 2d. Any factor contributing to a higher pay limit has serious consequences for a mine such as Rose Deep with its limited marginal reserves. It is difficult to provide increased grade and in doing so, the potential life of the mine is shortened.

The footage of development was satisfactory and exceeded the record achieved in 1950, while payability was better. Of the 45,081 ft. developed, 31,160 ft. were sampled of which 38 per cent (against 36 per cent) was payable, and the value of 6.1 dwt. went against 5.6 dwt. There was an increase in ore mined but the tonnage of reserves has come down to 1,545,00 of 3.6 dwt. against 2,083,000 of 3.5 dwt. Shafts and safety pillars account for a further 188,000 tons.

Further details of operations for the year 1952 appear on page 403 of this issue.

Outlook for Spaarwater

The report and accounts of Spaarwater Gold Mining Company for the year 1952 is not encouraging.

The net loss on the year's operations amounted to £20,166 (£12,388) which raised the debit balance carried forward to £151,217. Nor does the balance sheet provide a shock absorber. For excluding the debit carried forward, cash assets only amount to £149,160. This is unfortunate as it was hoped that Spaarwater would locate, at depth, one of the rich pay-

shoot systems thought to exist in its area. Thus it would appear that operations will soon have to be drastically curtailed, or assistance from outside relied upon if operations are to continue.

Rumours circulating from time to time have suggested that Spaarwater merge with Sub-Nigel whose property it adjoins on the western boundary. This seems a feasible proposition as the consulting engineers for both companies are New Consolidated Gold Fields.

The Technical Advisers to the company, New Consolidated Gold Fields, in their report accompanying Spaarwater's accounts for 1952, said that the development in the eastern section of the mine was mainly confined to the opening up of known pay-zones for the purpose of augmenting the ore reserve position. But, owing to the disappointing disclosures by development and diamond drilling in the 47 level area at the bottom of the north haulage, exploratory work in this area has been discontinued.

Ore reserves at the end of 1952 totalled 126,000 tons having a value of 5.5 dwt. over 37.1 in. Since the company crushed 127,000 during the year under review, reserves are sufficient for only one year's supply.

Major General W. W. Richards is Chairman. Meeting, Johannesburg, May 15.

Company Shorts

More Kennecott Capital for Virginia O.F.S.—The Kennecott Copper Corporation of New York invested £2,000,000 in Virginia Orange Free State Gold Mining Company just over a year ago when it took up £2,000,000 of the £3,000,000 of Unsecured Registered Loan Stock at par in order to provide funds needed to advance the mine's production date and to increase the milling capacity of the plant from 25,000 tons to 50,000 tons per month. Recently Kennecott took up the remaining £1,000,000 of this Unsecured Registered Stock and it is now announced that it has agreed to take up a further £1,600,000 of additional loan stock at par which will be similar to the existing stock except that redemption will not commence until the existing stock has been repaid in full and shall be completed not later than June 30, 1968; and that the conversion rights attached to this loan stock will permit Kennecott to convert up to 50 per cent of its holdings into shares at the price of 17s. 6d. per share until February 28, 1958.

This new money will enable further acceleration of the milling programme and it is now planned that so soon as production reaches 50,000 tons per month steps will be taken to increase capacity to 75,000 tons per month, the additional cost of which will be covered by the £1,600,000 provided by Kennecott. It is planned to achieve a monthly production of 50,000 tons by January, 1954, and 75,000 tons by January, 1955. Subsequently, with as little delay as possible, to raise milling capacity to 125,000 tons per month. But increases in the milling capacity beyond 75,000 will be financed out of profits.

In order to issue the additional loan stock to Kennecott and to provide for a loan of approximately £4,400,000 from the Atomic Energy Board to finance the cost of building the company's uranium and sulphuric acid plants, the directors will ask shareholders at an extraordinary meeting convened for April 29 in Johannesburg to empower them to raise their borrowing powers from the present maximum of £6,000,000 to £12,000,000; to sanction the issue of 914,286 new 5s. shares to cover the loan stock conversion rights and to extend the currency of the conversion rights attached to the existing loan stock to December 31, 1956.

The Future of the Kolar Goldfields.—With regard to the closing down of the Ooregum Mine in the Kolar Goldfield, reported in these columns last week, it is now known that the Governments of India and Mysore State are appointing a committee to go into the entire question of the gold mines in the Kolar goldfields.

The chief minister, Mysore, Mr. K. Hanumanthaya, told the legislative assembly on March 30 last, that he thought the committee would be announced within a week. The committee, he said, would also go into the question of the loss suffered by Ooregum's closure which was due to losses incurred on operations of about £175 per day.

Three New Mining Leases Granted.—The South African Minister of Mines has granted three new mining leases in the Klerksdorp area of the Far Western Rand to Hartebeestfontein Gold Mining, Buffelsfontein Gold Mining, and Ellaton Gold Mining companies.

The lease granted to Hartebeestfontein relates to approximately 4,889 claims on farms Hartebeestfontein 41 and Zandpan 43. The share of the profits payable to the South African Government under the lease terms will be calculated according to the formula

"y" equals 17.5 minus 105 over "x", where "y" is the percentage share of the profits payable to the Government, and "x" the ratio of profits to recovery expressed as a percentage.

The Buffelsfontein lease covers about 4,889 claims on farms Hartbeestfontein 41 and Buffelsfontein 75. The lease terms are "y" equals 16 minus 96 over "x".

The Ellaton lease consists of 888 claims on farms Nooitgedacht 53 and Strathmore 15. The lease terms are "y" equals 10 minus 60 over "x".

Selection Trust Forms a Canadian Subsidiary.—Selection Trust, London, has formed a Canadian subsidiary, Selco Exploration Company, with a head office at Toronto, by Federal charter with a capital of \$C1,000,000 no par value shares to investigate mining prospects with a view to active participation.

Mr. A. Chester Beatty, Jr. is president; Mr. T. H. Bradford, vice-president; Mr. R. M. Peterson, Mr. D. D. Irwin and Mr. Carl O. Lindberg are directors.

A year ago an office was opened in Montreal but this has now been moved to Toronto under the supervision of Mr. E. C. Wharton Tigar, of Selection Trust, with whom there are three staff geologists, Mr. T. Parks, Mr. P. B. Andrews and Mr. A. F. Warburton.

Camp Bird's Results for 1952.—A preliminary profit statement issued by Camp Bird covering operations for the calendar year 1952 announced the payment of 1s. per share which compares with a dividend of 1s. per share together with a Jubilee bonus of 3d. per share paid in respect of 1951.

Subject to audit, net profit for the year after charging £112,316 (£100,979) for taxation and allocating £50,000 (£65,000) to investment reserve, fell to £49,291 compared with £93,494 in the previous year. The dividend required a net amount of £57,065 (£71,331), nil against £25,000 was transferred to general reserve, and the carry forward at the financial year-end was £38,636 compared with £46,410 brought in.

The dividend will be paid on May 16 to members registered on April 17. The Annual Meeting will be held on May 5.

Consolidated Gold Fields Issue Oversubscribed.—The directors of Consolidated Gold Fields of South Africa have announced that the recent offer of 300,000 Ordinary £1 shares at 48s. per share to holders of Ordinary shares has been oversubscribed.

Bushtick Mines (1934)—A general meeting of shareholders in Bushtick Mines (1934) will be held in Bulawayo, Southern Rhodesia, on May 29 next to consider resolutions that the company be wound up voluntarily and that Mr. P. Morgan of Bulawayo be appointed liquidator.

Canadian Aluminiums Annual Report.—Aluminium Limited of Canada, and its subsidiaries, have reported a net profit for the year 1952 of \$22,372,289 or the equivalent of \$2.73 per share after deduction of capital cost allowances (depreciation and depletion), income taxes and all other charges. For the year 1951, net profit was \$28,760,876 or the equivalent of \$3.51 per share after allowing for the two-for-one stock split in 1952.

Production and sale of aluminium products in 1952 reached the highest levels in the history of the company. Consolidated sales income and operating revenues for the year were \$333,000,000 compared to \$284,000,000 in 1951.

Capital expenditure of \$186,000,000 for new hydro-electric and aluminium facilities in the Canadian provinces of Quebec and British Columbia, bauxite and alumina installations in British Guiana, Jamaica and French West Africa and for the expansion of the Company's other world-wide interests, were substantially larger than in 1951 or any previous year. The 1952 outlay brought total capital expenditures for the years 1951 and 1952 to \$306,000,000, being almost three-fourths of the capital costs of the presently authorized 1951-54 expansion programme which is now estimated at \$435,000,000.

Sales of aluminium in all forms and from all sources by consolidated subsidiaries reached a record level of 488,300 tonnes in 1952 compared with 434,000 tonnes in 1951 and 401,000 tonnes in 1950.

Cape Asbestos to Produce Inorganic Fibres from Rock.—Inorganic fibres obtained from a natural rock in Scotland having a silken appearance and with a high tensile strength are to be produced by Cape Asbestos Company, of London, who have acquiredactory premises in Stirling.

Obituary

Mr. J. W. CRAWLEY

After a short illness, Mr. J. W. Crawley died on Sunday, March 28, aged 68. Mr. Crawley began his business career as personal secretary to the late Sir Robert Hadfield in 1902, which position he held until joining the London office of Hadfields Ltd., in 1911 as their representative. Mr. Crawley continued to represent Hadfields Ltd., until his retirement in 1950.

HER MAJESTY'S COLONIAL SERVICE

A vacancy exists for Inspector of Mines in Cyprus.

Qualifications: Age limit 35. Degree or diploma in metalliferous mining of British University or School of Mines. Practical experience of all phases of underground and opencast workings and of the general management of mining properties.

Duties: Include administration and inspection of mines; advising Government on technical mining questions; issue of prospecting permits and licences to store and sell explosives; inspection of mines and quarries, explosive magazines and stores.

Terms of Appointment: On probation to the pensionable establishment with salary in scale of £870-£1,110 with entry according to experience plus overseas allowance of 15 per cent of basic salary. Income tax at low local rates. Quarters normally available at rental between 4½ and 6 per cent of basic salary. Free passages for officer, wife and three children on appointment; similar but variable privilege on leave. Free medical attendance for officer only. Vacation leave at rate of 3½ days for each month of resident service.

Apply in writing to the Director of Recruitment, Colonial Office, Great Smith Street, London, S.W.1, giving briefly age, qualifications and experience. Mention the reference number (CDE. 99/17/01).

We are entrusted to sell, on behalf of reliable Mine Owners, the entire output of **THREE LEAD ORE MINES**. We have 200 tons available for shipment, 100 to 150 tons monthly, 1,000 tons within a year. Enquiries invited.—**SALIM BAHARY**, P.O. Box 419, Teheran, Iran. Cables: "Salbary," Teheran.

WANTED.—Supplies of Vanadium Ore; details quantity, quality, price, and delivery to Blackwell's Metallurgical Works Ltd., Thermetal House, Russell Road, Liverpool, 19.

DIVIDENDS

Attock Oil 5% i (May 14)
Anglo-American Corporation of South Africa 40% (May 18)
Apex Mines 6.6d. (May 12)
Ayer Hitam Tin Dredging 25% (April 16)
Chartered Bank of India, Australia and China 9%
Climax Rock Drill and Engineering Works 2½% i
De Beers Consolidated Mines 6s. (May 1)
De Beers Consolidated Mines 5s. Def. 6s.
De Beers Industrial Corporation Cum. Pref. 5½% (May 1)
Imperial Smelting Corporation 6½%; Cum. Pref. 3½% (April 8)
James Howden 7½%
Jelapang Tin Dredging 50%
Kinta Tin Mines 10% i (April 10)
Konongo Gold Mines 10%
Malayan Tin Dredging 1s. 6d. i (April 30)
Manganese Bronze and Brass 14% (June 1)
Nigerian Electricity Supply 4% i
Rambutan 5% i (April 8)
Rhodesia Anglo-American 1s. 6d. i (May 14)
Rhodesia Broken Hill Development 25%
Rhokana Corporation Ord. 10s. and "A" (May 14)
Southern Malayan Tin Dredging 1s. 6d. (April 28)
Southern Tronoh Tin Dredging 3d. i (April 8)
Sungei Besi Mines 20% i
Tanganyika Concessions 10% (May 29)
Tanjong Tin Dredging 15% i (April 10)
Tronoh Mines 2s. i (April 10)
Tweefontein United Collieries 5%
i interim

AGENCE MINIERE ET MARITIME S A

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THE BRITISH SOUTH AFRICA COMPANY

The fifty-fifth annual general meeting of The British South Africa Company, Ltd., was held on March 26 at the Chartered Insurance Institute, 20 Aldermanbury, London, E.C.2, Sir Douglas O. Malcolm, K.C.M.G. (the President), who presided, in the course of his speech said:—

Our net profit at £2,674,776 is less by nearly £50,000 than last year; but this is much more than wholly due to the grievous burden of United Kingdom taxation. Our profit before taxation was indeed no less than £1,850,000 greater than that of last year, the great bulk of that increase being due to the growth of more than 1½ millions in our revenue from our Northern Rhodesian mineral rights.

From that profit before taxation of £8,309,930 there falls to be deducted £2,632,336 for Dominion income-tax, nearly £600,000 more than last year. No complaint can fairly be made about that, since it is from overseas that our great revenues are so very preponderantly drawn. But the burden of United Kingdom taxation grew by nearly £1,200,000, after allowing for Dominion relief, from £1,788,000 odd to £2,978,000 odd; and there is little indeed in the way of services rendered by our Government at home to our overseas undertaking to justify such a tribute as that.

Our estates made a satisfactory profit of just under £80,000 as against a trifle over £24,000 last year.

Our income from investments, interest and underwriting commission and interest on tax reserve certificates at £1,268,041 exceeds by more than 50 per cent last year's figure of £825,825. Our income from subsidiary companies shows a small increase; but our profits less losses on realization of investments at £19,932 show a substantial reduction from last year's figure of £204,934.

Our investments at £11,247,354 shows the large increase of over £2,000,000 as compared with last year's figure. Quoted investments account for very nearly £1,600,000 of this increase. The market value of the quoted investments, just under £13,000,000 at the date of the balance-sheet, reflects appreciation of over £4,000,000 at that date. The latest figure which I have indicates that our quoted investments now show an appreciation over book value of about £3,400,000.

Our unquoted investments at directors' valuation at or under cost at £2,359,516 exceed last year's figure by rather over £500,000, due mainly to loans to associated companies.

Current assets at £7,707,857 exceeds last year's figure by nearly £1,800,000 and cover an increase of nearly £1,000,000 in tax reserve certificates and of nearly £600,000 in the balance at bankers and cash in hand.

You may remember that when I last spoke to you this time last year I expressed the hope that if things should remain with us as they were then, particularly in regard to the output and price of minerals from Northern Rhodesia, especially copper, we should be able for the year now under review to maintain our dividend of 6s. notwithstanding that the Excess Profits Levy on the average of the year now under review and of that now current might cost us something in the neighbourhood of £1,000,000 a year. That anticipation has been approximately borne out. Excess Profits Levy for nine months of the year under review having cost us £950,000. The output of Northern Rhodesian copper for the year amounting to 333,284 tons at an average price as calculated for our royalty purposes of £216 12s. per ton compares with an output for the year ended September 30, 1951, of 297,380 tons at a price for royalty purposes of £186 7s. per ton. There has been a substantial fall in the value of zinc, and of output and value in the case of lead; but the importance of the figures for these minerals, though they are not negligible in themselves, is, for us, a minor matter as compared with the copper figures.

For the year now current the average value of the Northern Rhodesian copper output has been £253 a ton. Output was diminished by strikes on the copper belt for the months of October and November last year, but is now proceeding at the rate of 25,000 tons a month, so that once more I feel able to express the hope that we shall be able to maintain our dividend in spite of the great burden of British taxation on which I have perhaps said enough already. But we must never forget that we can no more rely on the permanent continuance of the present very high price of copper than experience has shown than we can rely on the permanence of peak prices for zinc and lead.

For the year under review the maintenance of our 6s. dividend, equal to 40 per cent per unit of stock or share of 15s. will absorb, as last year, £1,379,779 leaving us with £1,294,997, as compared with £1,343,430 last year to add to our figure of unappropriated profits which will then stand at £4,614,557, as compared with £3,319,560 last year.

I can claim that we are maintaining our very strong position but this is a period of quite unprecedentedly high copper prices.

During the year under review and so far during the year now current we have been living through a critically important period in Rhodesia from the political point of view. I refer, of course, to the scheme for federation of Southern and Northern Nyasaland which has been, and still is, the subject of so much anxious public discussion. For the moment it seems as though the issue for or against the federal scheme will turn mainly on the result of the referendum to be held in Southern Rhodesia on April 9—very soon now.

This is not the time and place for political argument, and I will content myself with expressing the earnest hope that in the general economic interest of the great territories with which we have been so long and so intimately connected, and, not least, in the best interest of the native African peoples, the federal scheme may be safely brought to pass.

To-day there is only one point in connection with the federal scheme to which I wish to draw your attention, and that is its effect on the provision of the formal agreement of September 14, 1950, between His Majesty's Government in the United Kingdom, the Northern Rhodesian Government, and ourselves.

The federal scheme, published as a White Paper (Cmd. 8754) contains the following clause:—

"Where immediately before the establishment of the Federation, Her Majesty's Government in the United Kingdom is bound by any written agreement affecting any territory or any rights exercisable therein, being an agreement under which that Government declares that it regards itself as responsible for securing the carrying out of the agreement by the Government for the time being of that territory, then the Government of the Federation will, so far as the matters dealt with in the agreement are within the executive or legislative competence of the Federation, be bound to observe the provisions of that agreement."

Our legal advisers assure us that the Mineral Rights Agreement of September 14, 1950, falls within the category of agreement described by this paragraph. The effect of this clause, therefore, when it is inserted in the Federal Constitution, will be to make our agreement binding upon the Federal Government in the same way and to the same extent as it now binding upon the Governments of the United Kingdom and of Northern Rhodesia.

The report and accounts were unanimously adopted and the dividend of 40 per cent was approved.

At a subsequent extraordinary meeting a special resolution was passed approving the draft of a new supplement Deed of Settlement.

ANGLO AMERICAN CORPORATION OF SOUTH AFRICA, LIMITED

(Incorporated in the Union of South Africa)

DECLARATION OF DIVIDEND No. 33 ON THE ORDINARY SHARES

NOTICE IS HEREBY GIVEN that Dividend No. 33, being the final dividend for the year ended December 31, 1952, of 4s. per share, has been declared payable to shareholders registered in the books of the Corporation at the close of business on April 14, 1953, and to persons presenting Coupon No. 36 from Share Warrants to Bearer. This dividend together with the interim dividend declared on September 29, 1952, makes a total of 6s. per share for the year, which is the same as for the previous year.

The dividend is declared in the currency of the Union of South Africa and becomes due on April 15, 1953. Warrants will be posted from the Head and London Offices on or about May 18, 1953.

The dividend is payable subject to the usual conditions which can be inspected at the Head and London Offices of the Corporation.

The Transfer Books and Register of Members will be closed from April 15, 1953, to April 23, 1953, both days inclusive.

Holders of Share Warrants to Bearer are notified that the dividend is payable at Barclays Bank (Dominion, Colonial and Overseas), Circus Place, London Wall, E.C.2, or at the Banque de l'Union Parisienne, 6 and 8, Boulevard Haussmann, Paris, or at Banque Lambert, 2 Rue d'Egmont, Brussels, on or about May 19, 1953. Coupons must be left four clear days for examination.

The effective rate of Non-Resident Shareholders' Tax is 6.225 per cent.

Subject to final audit, the profit for the year, after providing for taxation, is £3,015,000 (previous year £2,894,000).

An amount of £4,400,000, including £3,636,300 representing the net premium received in respect of the issue of shares made in May 1952, has been placed to General Reserve, which now stands at £17,900,000. In the previous year £850,000 was placed to General Reserve.

London Office:

11, Old Jewry, E.C.2.

March 26, 1953.

By Order of the Board.

W. E. GROVES,

London Secretary.


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ROSE DEEP, LIMITED

(Incorporated in the Union of South Africa)

Extracted from the Annual Report for the Year ended

31st December, 1952			
Authorised and Issued Capital £700,000 in £1 Shares, fully paid	£1,762,026	£15 10	Per ton milled
Tons milled 983,000	1,604,526	1 12 8	
Total Working Revenue	£1,762,026	£15 10	
Total Working Expenditure	1,604,526	1 12 8	
Working Profit	£157,500	£0 3 2	
Total Profit for the year	£173,348		
Balance unappropriated at 31st December, 1951	197,121		
Transfer from Shareholders' Contingency Reserve	400		
	£370,869		

This amount has been dealt with as follows:—			
Funds Transferred for Capital Expenditure	£5,510		
Taxation	22,396		
Forfeited Dividends Account	439		
Dividends declared during the year Nos. 94 of 1s. 9d. per share and 95 of 1s. 3d. per share	105,000	133,345	

Leaving a balance unappropriated of..... £237,524

The ore reserve re-estimated at 31st December, 1952, was as follows:—

REEF	AVAILABLE				SHAFT AND SAFETY PILLARS				TOTAL			
	Value		Width		Value		Width		Value		Width	
	Tons (000s)	Dwt. Inches	Tons (000s)	Dwt. Inches	Tons (000s)	Dwt. Inches	Tons (000s)	Dwt. Inches	Tons (000s)	Dwt. Inches	Tons (000s)	Dwt. Inches
Main Reef ..	750	3.7	62.0	1	5.4	44.0	751	3.7	62.0			
Main Reef Leader	113	3.2	53.4	24	3.9	45.6	137	3.3	51.9			
Composite Reef	109	3.8	52.7	105	4.5	57.3	214	4.2	54.9			
South Reef ..	573	3.6	58.3	58	5.5	58.7	631	3.8	58.4			
Total ..	1,545	3.6	59.2	188	4.8	55.8	1,733	3.8	58.8			

Compared with the previous year's estimate, the available reserve decreased by 538,000 tons, the value being 0.1 dwt. higher and the width 0.4 inch greater. Of this decrease 234,000 tons was due to a change in the estimated pay limit caused by higher costs.

At the forthcoming Annual General Meeting it is proposed to consider and, if thought fit, pass a Special Resolution reducing the authorized capital to £665,000 by returning 1s. 0d. per share in cash to shareholders. The full Report and Accounts may be obtained from the London Secretaries, A. MOIR & CO., 4 London Wall Buildings, E.C.2.

EAST RAND PROPRIETARY MINES

LIMITED

(Incorporated in the Union of South Africa)

Extracted from the Annual Report for the Year ended

31st December, 1952			
Capital £2,000,000 in 10s. Shares, £1,980,000 issued fully paid	£6,771,994	£2 15 3	Per ton milled
Tons milled 2,451,000	4,901,198	2 0 0	
Total Working Revenue	£6,771,994	£2 15 3	
Total Working Expenditure	4,901,198	2 0 0	
Working Profit	£1,870,796	£0 15 3	
Total Profit for the year	£1,880,327		
Balance unappropriated at 31st December, 1951	849,666		
Transfer from Shareholders' Contingency Reserve	5,100		
	£2,735,693		

This amount has been dealt with as follows:—			
Funds transferred for Capital Expenditure	£226,351		
Taxation	495,589		
Forfeited Dividends Account	5,664		
Dividends declared during the year—No. 65 of 2/6 per share and No. 66 of 2/6 per share	990,000	1,717,604	

Leaving a balance unappropriated of..... £1,018,089

The ore reserve was re-estimated as at 31st December, 1952, as follows:

REEF	AVAILABLE				SHAFT AND SAFETY PILLARS				TOTAL			
	Value		Width		Value		Width		Value		Width	
	Tons (000s)	Dwt. Inches	Tons (000s)	Dwt. Inches	Tons (000s)	Dwt. Inches	Tons (000s)	Dwt. Inches	Tons (000s)	Dwt. Inches	Tons (000s)	Dwt. Inches
Main Reef ..	949	4.0	53.2	641	3.8	61.2	1,590	3.9	56.1			
Main Reef Leader	670	4.7	48.2	637	4.9	47.5	1,307	4.8	47.8			
Composite Reef	3,924	6.5	45.3	949	4.7	56.8	4,873	6.1	47.2			
South Reef ..	508	3.9	46.4	215	4.3	58.9	723	4.0	49.5			
Total ..	6,051	5.7	46.8	2,442	4.5	55.2	8,493	5.3	48.9			

Compared with the previous year the available reserve decreased by 892,000 tons, the value being 0.6 dwt. higher and the width lower by 1.8 inches. The total reserve decreased by 1,763,000 tons, of which 1,589,000 tons was due to the rise in costs and consequent increase in the pay limit.

The full Report and Accounts may be obtained from the Secretaries of the European Committee, A. MOIR & CO., 4 London Wall Buildings, E.C.2.

ANGLO AMERICAN CORPORATION OF SOUTH AFRICA, LIMITED

(Incorporated in the Union of South Africa)

MINING COMPANIES' REPORTS (abridged) for year ended 31st December, 1952

(All Companies mentioned are incorporated in the Union of South Africa)

BRAKPAN MINES LIMITED

CAPITAL: Authorised and Issued—£1,150,000 in 4,600,000 Shares of 5s. each, fully paid.

Tons milled	Yield (per ton, 3.59 dwts.)	254,857 ozs.
Revenue and Expenditure Account	Appropriation Account	
*Revenue (per ton milled 45/11.4)	Government and Provincial Taxes	140,240
Working Costs (per ton milled 38/10)	Government Share of Profits under Mining Lease	36,834
Working Profit (per ton milled 7/1.4)	Dividends No. 79 of 7½d. per share and No. 80 of 9d. per share	316,250
Sundry Revenue less Expenditure	Directors' Special Remuneration	7,500
Total Profit	Appropriated for Capital Expenditure	52,941
Add—	Balance unappropriated at 31st December, 1952 ..	186,529
Balance to credit of Appropriation Account at 31st December, 1951		
Outstanding Liabilities Trust Fund—refund ..		
£740,294		£740,294

* Working revenue includes £80,565 in respect of the premium arising from the sales of gold at enhanced prices for industrial and artistic purposes.

ORE RESERVE (based on pay limit of 3.4 dwts.) (1951-3.3 dwts.)

Tons	Slope Width (inches)	Slope Value (dwts.)	Inch-dwts.
1951	3,965,000	43.33	4.59
1952	3,925,600	43.91	4.66

The value of the ore mined from the Reserve in 1952 was 4.40 dwts.

DEVELOPMENT:—

Advanced	Footage Sampled	Percentage Payable	Average reef width (inches)	Average assay value (dwts.)
71,603	52,580	28.3	39.61	14.01

Included in development is footage accomplished on the footwall reef which totalled 9,880 feet, of which 7,655 feet was sampled, 30.6 per cent. being payable, averaging 20.73 dwts. over 83.71 inches.

CAPITAL EXPENDITURE.—During 1952 expenditure under this heading amounted to £38,016 and it is estimated that an amount of £39,000 will be expended for the current year.

GENERAL.—The Company's holding in The South African Land and Exploration Co. Ltd., remains unchanged at 361,067 shares.

SPRINGS MINES LIMITED

CAPITAL: Authorised and Issued—£2,527,500 in 10,110,000 Shares of 5s. each, fully paid.

Tons milled	Yield (per ton, 2.65 dwts.)	258,740 ozs.
Revenue and Expenditure Account	Appropriation Account	
*Revenue (per ton milled 33/11.5)	Government and Provincial Taxes	1,201
Working Costs (per ton milled 30/6.5)	Government share of Profits under Mining Lease ..	20,328
Working Profit (per ton milled 3/5)	Appropriated for Capital Expenditure	8,921
Sundry Revenue, less Expenditure	Capital Issue Expenses ..	5
Total Profit	West Springs, Ltd., Forfeited Dividends—Since Paid	47
Add—	Dividend No. 61 of 3d. per share	126,375
Balance to credit of Appropriation Account at 31st December, 1951	Dividend No. 62 of 3d. per share	126,375
Outstanding Liabilities Trust Fund—refund ..	Directors' Special Remuneration	7,500
£608,318	Balance unappropriated at 31st December, 1952 ..	317,566
		£608,318

* Working Revenue includes £84,467 in respect of the premium received from the sales of gold at enhanced prices for industrial and artistic purposes.

ORE RESERVE (based on pay limit of 2.9 dwts.) (1951—2.7 dwts.)

Tons	Slope Width (inches)	Slope Value (dwts.)	Inch-dwts.
1951	4,025,900	43.56	4.32
1952	3,327,500	43.51	4.37

The Reserve includes ore on the Kimberley Reef Series, which totalled 115,300 tons, averaging 3.24 dwts. over a width of 48.9 inches. The value of the ore mined from the Reserve in 1952 was 4.31 dwts.

DEVELOPMENT:—

Advanced	Footage Sampled	Percentage payable	Average reef width (inches)	Average assay value (dwts.)
Main Reef Leader	33,882	28.885	36.9	18.42
Kimberley Reef	1,102	1,060	18.4	32.64

Development on the Kimberley Reef horizon ceased during the year, as the extent of the payable channels had been fully explored. Operations on this horizon are now confined solely to stoping, and the tonnage from this reef supplied monthly to the Reduction Plants is now on a diminishing scale.

Development is now being concentrated in the Vlakfontein area, from which area increased stoping tonnage is being supplied.

WESTERN REEFS EXPLORATION AND DEVELOPMENT COMPANY, LIMITED

CAPITAL: Authorised and Issued—£1,750,000 in 7,000,000 Shares of 5s. each, fully paid.

NOTE:—In April, 1952, the Anglo American Corporation of South Africa, Limited, offered to subscribe for the 125,000 reserve shares of the Company at 40s. per share in cash. This offer was accepted and the issued capital of the Company was accordingly increased from £1,718,750 to £1,750,000 divided into 7,000,000 shares of 5s. each.

Tons milled....1,345,000. Yield (per ton, 4.17 dwts.)....280,303 ozs.

Revenue and Expenditure Account	Appropriation Account	
*Revenue (per ton milled 53/3.4)	Government and Provincial Taxes	697
Working Costs (per ton milled 33/9.5)	Reserve for Terminal Liability under Silicosis Acts	3,829
Working Profit (per ton milled 19/5.9)	Dividend No. 22 of 1s. 3d. per share	437,500
Sundry Revenue, less Expenditure	Dividend No. 23 of 1s. 3d. per share	437,500
Total Profit	Directors' Special Remuneration	8,000
Add—	Transferred to Uranium Reserve Account	200,000
Balance to credit of Appropriation Account at 31st December, 1951	Appropriated for Capital Expenditure	220,409
	Balance unappropriated at 31st December, 1952 ..	280,458
£1,588,393		£1,588,393

* Working revenue includes £84,023 in respect of the premium arising from the sales of gold at enhanced prices for industrial and artistic purposes.

ORE RESERVE (based on pay limit of 3.0 dwts. (1951—2.8 dwts.))

Tons	Slope Width (inches)	Slope Value (dwts.)	Inch-dwts.
1951	4,602,700	46.72	5.08
1952	4,703,000	47.29	5.03

The value of the ore mined from the Reserve in 1952 was 5.14 dwts.

DEVELOPMENT:—

Advanced	Footage Sampled	Percentage payable	Average reef width (inches)	Average assay value (dwts.)
Mining Lease Area	79,133	38,830	42.6	25.55

In addition to the above, prospecting development was accomplished in a portion of farm Goedgenoeg No. 62 which is outside the Mining Lease Area but over which your Company holds rights under the Reserved Minerals Development Act. The footage advanced in this area totalled 6,693 feet, of which 3,086 feet was on reef and 3,605 feet sampled; the payable footage amounted to 1,965 feet (64.1 per cent), averaging 22.32 dwts. over 25.82 inches, or 576 inch-dwts.

CAPITAL EXPENDITURE.—During the year under review the expenditure under this heading amounted to £461,616, of which £353,013 was incurred in connection with the No. 3 Vertical Shaft, the Sub-Vertical Shaft, and work incidental thereto; it is estimated that expenditure for the current year will be £321,000. Capital expenditure on the uranium and acid plants has not been included in the above figures, the expenditure in 1952 being £2,903,825, and the estimated expenditure for 1953 £1,042,000.

URANIUM.—Progress on the construction of the uranium and acid plants has been retarded by late delivery of materials but, provided there are no further delays, the plants should come into operation during the second quarter of 1953.

The total expenditure on the plants at the end of the year was £3,626,158, of which amount £3,510,121 was financed from loans in terms of the agreements with the Export-Import Bank of Washington and The Ministry of Supply in the United Kingdom; the balance, viz. £116,037 shown in the Balance Sheet as "over-expended balance of Capital Funds," was met by further loans obtained during the first quarter of 1953.

EXTRAORDINARY GENERAL MEETING.—The attention of shareholders is directed to the Notice convening an Extraordinary General Meeting to be held immediately after the conclusion of the Annual General Meeting. Shareholders will be asked to pass a Special Resolution increasing the Authorised Capital of the Company to £2,000,000 and two ordinary Resolutions, one authorising the Directors to issue the new shares at their discretion and the other increasing the borrowing powers of the directors to £6,000,000.

Apart from expenditure on the uranium plant, capital expenditure on housing and other commitments will be undertaken in 1953/54, for which no capital funds are available. This expenditure will probably be financed by temporary borrowings, but authority is also being sought from shareholders to place some reserve shares at the disposal of the Directors, so that, if considered advisable, a share issue may be made to assist in meeting this expenditure. As practically the whole of the present borrowing powers of the Directors are earmarked for the uranium loans, it is necessary to increase the borrowing powers over the present maximum of £5,000,000.

DAGGAFONTEIN MINES, LIMITED

CAPITAL: Authorised—£2,000,000. Issued—£1,750,000 in 7,000,000 Shares of 5s. each, fully paid.

Tons milled	Revenue and Expenditure Account	Yield (per ton, 4.76 dwts.)	Appropriation Account
2,788,000.	£	663,046 ozs.	£
*Revenue (per ton milled 60/10.6).....	8,487,075	Government and Provincial Taxes	1,447,095
Working Costs (per ton milled 25/11.4)	3,617,674	Government share of Profits under Mineral Lease	817,509
Working Profit (per ton milled 34/11.2)	4,869,401	Reserve for Terminal Liability under Silicosis Acts	22,637
Sundry Revenue less Expenditure	79,069	Transfer to Uranium Reserve	400,000
Total Profit	4,948,470	Dividend No. 39 of 3/- per share	1,050,000
Add—		Dividend No. 40 of 3/- per share	1,050,000
Balance of credit to Appropriation Account at 31st December, 1951	241,586	Directors' Special Remuneration	7,500
		Appropriated for Capital Expenditure	83,630
		Balance unappropriated at 31st December, 1952	311,685
	£5,190,056		£5,190,056

* Working revenue includes £208,292 in respect of the premium arising from the sales of gold at enhanced prices for industrial and artistic purposes.

ORE RESERVE (based on pay limit of 2.6 dwts. (1951—2.5 dwts.)) :
 Tons Stope Width Stope Value Inch-dwts.
 (inches) (dwts.)
 1951..... 14,430,300 .. 43.78 .. 5.73 .. 251
 1952..... 13,982,700 .. 44.29 .. 5.73 .. 254

The Reserve includes 5,355,200 tons, averaging 6.17 dwts. over a width of 49.81 inches on the Kimberley Reef series.

The value of the ore mined from the Reserve in 1952 was 5.87 dwts.

DEVELOPMENT

	Footage Advanced	Footage Sampled	Percentage payable	Average reef width (inches)	Average assay value (dwts.)
Main Reef Leader	29,396	23,140	48.4	15.16	19.66
Kimberley Reef	35,651	28,330	46.0	28.26	17.80

CAPITAL EXPENDITURE.—During the year under review the expenditure under this heading amounted to £63,259, and for the current year it is estimated that an amount of £60,000 will be expended. Capital expenditure on the uranium and acid plants has not been included in the foregoing figures, the amount expended during 1952 being £2,944,623, and the estimated expenditure for 1953 is £250,000.

URANIUM.—The Appropriation Account shows an amount of £400,000 transferred to a "Uranium Reserve Account." In the next few years further appropriations will be made to this account, which represents a portion of present tax savings and will be used in later years of uranium production to meet taxation liabilities on uranium profits.

The construction of the uranium plant has been delayed by late deliveries of material, but it is anticipated that the plant will be in production during the current month.

At the end of the year under review £3,614,532 has been spent on the uranium and acid plants and an amount of £3,480,226 has been advanced to the Company in terms of the loan agreements with the Export-Import Bank of Washington and The Ministry of Supply in the U.K. The difference of £134,306 will be met by further borrowings during the current quarter.

EAST DAGGAFONTEIN MINES, LIMITED

CAPITAL: Authorised—£2,000,000. Issued—£1,865,000 in 3,730,000 Shares of 10s. each, fully paid.

Tons milled	Revenue and Expenditure Account	Yield (per ton, 3.55 dwts.)	Appropriation Account
1,140,500.	£	202,696 ozs.	£
*Revenue (per ton milled 45/6.7).....	2,598,275	Government and Provincial Taxes	387,637
Working Costs (per ton milled 31/3.7)	1,785,511	Reserve for Terminal Liability under Silicosis Acts	2,784
Working Profit (per ton milled 14/3)	812,764	Dividend No. 25 of 1/1½d. per share	209,813
Sundry Revenue, less Expenditure	3,377	Dividend No. 26 of 1/- per share	186,500
Total Profit	816,141	Directors' Special Remuneration	8,000
Add—		Appropriated for Capital Expenditure	5,666
Balance of credit to Appropriation Account at 31st December, 1951	180,614	Balance unappropriated at 31st December, 1952	196,355
	£996,755		£996,755

* Working revenue includes £66,676 in respect of the premium arising from sales of gold at enhanced prices for industrial and artistic purposes.

ORE RESERVE (based on pay limit of 3.2 dwts. (1951—2.8 dwts.)) :
 Tons Stope Width Stope Value Inch-dwts.
 (inches) (dwts.)
 1951..... 4,685,200 .. 36.83 .. 4.51 .. 166
 1952..... 4,360,300 .. 36.83 .. 4.43 .. 163

The Reserve includes 1,263,000 tons averaging 5.56 dwts. over a width of 36.99 inches on the Kimberley Reef Series. The value of the ore mined from the Reserve in 1952 was 4.56 dwts.

DEVELOPMENT

	Footage Advanced	Footage Sampled	Percentage payable	Average reef width (inches)	Average assay value (dwts.)
Main Reef Leader	28,718	23,775	29.5	8.86	23.73
Kimberley Reef	27,026	21,625	20.5	5.27	53.50

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THE SOUTH AFRICAN LAND AND EXPLORATION COMPANY, LIMITED

CAPITAL: Authorised—£500,003. Issued—£433,125 in 2,475,000 Shares of 3s. 6d. each, fully paid.

Tons milled	Revenue and Expenditure Account	Yield (per ton—3.60 dwts.)	Appropriation Account
1,317,000.	£	237,008 ozs.	£
*Revenue (per ton milled 46/-)	3,029,167	Government and Provincial Taxes	401,355
Working Costs (per ton milled 32/4.9)	2,133,976	Government share of Profits under Mining Lease	32
Working Profit (per ton milled 13/7.1)	895,191	Reserve for Terminal Liability under Silicosis Acts	4,464
Sundry Revenue, less Expenditure	7,155	Dividend No. 28 of 1s. 9d. per share	216,562
Total Profit	902,346	Dividend No. 29 of 1s. 9d. per share	216,563
Add—		Directors' Special Remuneration	7,500
Balance of credit to Appropriation Account at 31st December, 1951	145,189	Appropriated for Capital Expenditure	28,252
		Balance unappropriated at 31st December, 1952	172,807
	£1,047,535		£1,047,535

* Working revenue includes £72,735 in respect of the premium arising from the sales of gold at enhanced prices for industrial and artistic purposes.

ORE RESERVE (based on pay limit of 3.2 dwts. (1951—2.9 dwts.)) :
 Tons Stope Width Stope Value Inch-dwts.
 (inches) (dwts.)
 1951..... 3,323,800 .. 42.29 .. 5.01 .. 199
 1952..... 3,424,300 .. 42.22 .. 5.01 .. 212

The value of the ore mined from the Reserve in 1952 was 4.87 dwts.

DEVELOPMENT

Advanced	Footage Sampled	Percentage Payable	Average reef width (inches)	Average assay value (dwts.)
76,848	47,745	38.3	30.86	13.50

CAPITAL EXPENDITURE

During the year under review expenditure under this heading amounted to £18,349; it is estimated that expenditure for the current year will total £33,000.

VAAI REEFS EXPLORATION AND MINING COMPANY, LIMITED

EXTRACT FROM THE STATEMENT BY THE CHAIRMAN, MR. R. B. HAGART, DATED 18th MARCH, 1953, CIRCULATED WITH THE ANNUAL REPORT AND ACCOUNTS FOR THE YEAR ENDED 31st DECEMBER, 1952.

The mineral rights over 300 morgen of a portion of the farm Zandpan No. 43 are in the course of being ceded to the Hartbeesfontein Gold Mining Company, Limited, to be included in the area over which that Company has made application for a mining lease. For this consideration your Company will be paid £21,000 in cash and has subscribed at par for 280,000 shares of 5s. each in the initial issued capital of the Hartbeesfontein Gold Mining Company, Limited.

During the year an amount of £328,737 was spent on shaft sinking and equipment and £8,493 on general capital expenditure.

Good progress has been made on the No. 3 Shaft system which is a joint venture with the Western Reefs Exploration and Development Company, Limited. The Vertical Shaft has been in full operational use for some time, and in July, 1952, the Sub-Vertical Shaft was stopped at its final depth of 2,911 feet below the shaft collar of the underground hoist chamber. The equipping of the Sub-Vertical Shaft is now almost complete and it is expected that the second permanent hoist will be brought into operation during the second quarter of 1953.

Station cutting at various levels, and the installation of ore and waste pass systems is now being undertaken to allow development to take place on the Vaal Reef as soon as possible, and it is estimated that development on reef will start towards the middle of 1953.

It was decided last year to drive the main haulage shaft from No. 3 Shaft to the site of the No. 1 Vertical Shafts and the Sub-Vertical Shafts. The site of this new shaft system is some 7,800 feet to the east of No. 3 Shaft and during 1952 the haulage was driven in country rock on the 4,000-foot level and reached the site of the Sub-Vertical Shafts early in 1953. Excavations for the underground hoist chambers and other work is now taking place to allow sinking of the Sub-Vertical Shafts to start early in 1954. When this stage is reached a decision can be taken regarding the sinking of the No. 1 Vertical Shafts from the surface. This procedure was decided upon so as to conserve expenditure as far as possible during 1952/53, and at the same time ensure that the production date of the mine would not be unduly delayed.

Capital expenditure during 1953, which will cover the cost of underground development from No. 3 Shaft and preliminary work in connection with the 1954 shaft sinking programme is estimated at £750,000. Arrangements have been made with the Anglo American Corporation to borrow these funds as required. The Company's present borrowing powers are, however, limited to £375,000, and at the Annual General Meeting shareholders will be asked to approve the increase of the Directors' borrowing powers to £1,500,000. Borrowing powers in excess of present indicated requirements are being sought so as to provide for further temporary finance, if necessary, until the best method of providing the permanent finance to bring your mine to production is decided upon.

NOTES

- (1) Due to fluctuations in the dollar sterling exchange rate, the official price of gold sold during the year varied between 247s. 6d. and 249s. 11d. per ounce fine.
- (2) During the year the only change in taxation was in respect of non-mining revenue which was increased from 4s. 6d. to 5s. in the £, with effect from the 1st July, 1951.

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